

**Electrofishing Survey Results for Coastal Plain Streams on the Francis
Marion National Forest, South Carolina, 2002**



United States Department of Agriculture Forest Service
Southern Research Station
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January 2003

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Introduction

In 1993, the Francis Marion Nation Forest (FMNF) formed a cooperative agreement with the Belle W. Baruch Institute for Marine Biology and Coastal Research to perform baseline fish surveys of the Forest's freshwater coastal plain streams. The purpose of the survey was "to develop a snapshot of the forest fishes in the Francis Marion and to estimate species diversity and relative abundance" (Hansbarger and Dean 1994). Between February and July 1993, fish surveys were performed at 53 sites using a combination of backpack electrofishing and light traps. Water chemistry data (dissolved oxygen and pH) and qualitative habitat descriptions were also recorded.

In 2002, the FMNF and the U. S. Forest Service Southern Research Station Center for Aquatic Technology Transfer (CATT) re-surveyed 29 of the 53 sites sampled in Hansbarger and Dean (1994). We sampled at the same locations as in 1993, but with slightly different methods to assess the current diversity and relative abundance of fish species in FMNF streams and compare with 1993 survey results. This report summarizes the results of the 2002 surveys and where possible compares results between the 1993 and 2002 surveys.

Survey Area

All streams were located within the coastal plain region of the FMNF. At least two sites per major watershed were sampled in 2002. Within each watershed, priority was given to the sites with the highest species diversity or the presence of American eels in 1993 (Jeanne Riley, pers. comm.). Sites were located near road crossings to remain consistent with Harnsbarger and Dean (1994) and to facilitate access (see 'Survey Area Maps' section). The site numbers used in the present report correspond to the site numbers used in Hansbarger and Dean (1994).

Methods

Sampling methods used during the 1993 surveys are described in detail in Hansbarger and Dean (1994). The 1993 surveys consisted of a single pass with an AC backpack electrofishing unit through a 100-yard reach. One electrode on the shocker was equipped with a net and a second individual also captured fish with a dipnet. Blocknets were placed at the upstream and downstream ends of the sample reach. At some sites the electrofishing was supplemented with light traps, although these did not catch any additional species of fish. Captured fish were counted, measured, and weighed. Habitat characteristics were described and dissolved oxygen and pH readings were recorded.

In 2002, we returned to approximately the same locations sampled in 1993. The majority of sites in 2002 were located at least 100 m upstream of road crossings. Occasionally this was not possible due to lack of water or property boundaries (as noted in 'Remarks', Appendix A). Three-pass depletion electrofishing was performed on a 100 m reach of stream using a pulsed DC backpack electrofishing unit

equipped with a net and two dipnetters. Block nets were placed at the upstream and downstream ends of the surveyed reach. Fish from each pass were processed separately. The total length of the largest and smallest individual captured in each pass was recorded. The total number of each species captured was recorded and all individuals of a given species were pooled to obtain a batch weight for each pass. Water temperature and pH were measured at the upstream end of the reach before the electrofishing passes were performed. Water temperature was measured with a hand held thermometer and pH was measured with a pH Testr 2* model portable pH meter.

Habitat surveys began at the downstream end of the 100 m fish survey reach and ended at the upstream end. Habitat in each stream was classified and inventoried by a two-person crew. One crew member identified each habitat unit by type (Armantrout 1998), estimated average wetted width, average and maximum depth, riffle crest depth (RCD), and substrate composition for each habitat unit, and determined if pool substrates were embedded. Habitat was stratified into similar groups based on naturally occurring habitat units including pools and riffles (Table C1). Glides were identified during the survey but were grouped with pools for data analysis. Runs and cascades were also identified but were grouped with riffles for data analysis. The length (0.1 m) of each habitat unit was measured with a hip chain. Average wetted width was visually estimated. Average and maximum depth of each habitat unit were estimated by taking depth measurements at various places across the channel profile with a graduated staff marked in 5 cm increments. The RCD was estimated by measuring water depth at the deepest point in the hydraulic control between riffles and pools. The RCD was subtracted from average pool depth to obtain an estimate of residual pool depth. Substrates were assigned to one of nine size classes (Table C2). Dominant substrate (covered greatest amount of surface area in habitat unit) and subdominant substrate (covered 2nd greatest amount of surface area in habitat unit) were visually estimated. Substrate was considered to be embedded if sand, silt, or clay filled the interstitial spaces between larger size substrates over greater than 35% of the surface area of the stream bed in a given habitat unit.

The second crew member classified and inventoried large woody debris (LWD) within the stream channel and recorded data on a Husky fex21¹ data logger. LWD was assigned to one of four size classes (Table C3). Woody debris less than 1 m long and less than 10 cm in diameter were not counted.

In a subset of habitat units measurements were made to verify visual estimates. The wetted width of selected habitat units was measured with a meter tape perpendicular to flow. If the entire reach consisted of one habitat unit (typically a long pool), measurements were made at 25 m and 75 m from the start of the reach. In riffles we also estimated the bankfull stream channel width and riparian widths, and measured channel gradient. We estimated bankfull channel width by measuring the width of the bankfull channel perpendicular to flow (Rosgen 1996). We estimated riparian width by measuring from the edge

of the bankfull channel to the intersection with the nearest landform at an elevation of two-times the maximum bankfull depth. We added the bankfull width to the riparian widths to estimate flood-prone area (Rosgen 1996). Gradient was estimated by using a clinometer to site from the downstream to the upstream end of selected riffles.

Results

Habitat surveys were performed at 9 of 29 sites and water temperature and pH were recorded at 8 sites (Table 1). No habitat or water chemistry data were collected at sites where the channel was dry (17 sites) or swamp (1 site). Wetted channel widths ranged from 1.0 m to 3.3 m. Dominant and subdominant substrates were organic material, clay, and silt. The majority of LWD were <50 cm in diameter and <5 m in length and no LWD > 50 cm in diameter were recorded. Water temperature was between 23 C and 28 C and pH ranged from 5.8 – 8.0.

A total of 19 species of fish were captured at the 29 sample sites in 2002, whereas 31 species were captured at the same sites in 1993 (Table 2). Three new species were captured in 2002, however 15 species that were captured in 1993 were not captured in 2002. Six of the 15 species that were lost in 2002 were captured at four or more sites in 1993. The spotted sunfish, redbreast sunfish, largemouth bass, common shiner, ironcolor shiner, and dusky shiner were found at four or more sites in 1993, but were absent in 2002. All other species lost in 2002 were found at less than four sites in 1993. Several species were found only at sites in 1993 that were dry in 2002, including bowfin, brown bullhead, gizzard shad, and spotted sucker. Where possible, population estimates were calculated from the three-pass depletion data using formulas presented in Kwak (1991) (Appendix B).

Discussion and Recommendations

Overall, habitat conditions were similar in 2002 when compared with 1993. One notable difference in habitat conditions was in the amount of LWD encountered in the streams. The 1993 surveys were performed following Hurricane Hugo and sampling was reported as “very difficult” with “many sites impossible to sample due to the large amount of debris down in some streams” (Hansbarger and Dean 1994). In 2002, the streams were no longer choked with debris and sampling was not impeded by LWD. Few pieces of large sized debris were encountered. The greatest impediment to sampling was lack of water at 17 of the 29 sites.

The habitat survey technique that was used in 2002 was based on the basinwide visual estimation technique (BVET) (Dolloff et al. 1993), which has been successfully used to survey long reaches of mountain and piedmont streams in South Carolina (Black et al. 2003a and b). Lack of variation both within habitat units and among habitat types limited the usefulness of traditional BVET methods when applied to 100 m reaches of coastal plain stream. Modifications to the BVET or other methods may

provide a more complete description of these types of streams. Techniques have been developed for characterizing small reaches of coastal plain streams (MACSW 1997, Paller 1994, Warren et al. 2002), however if longer reaches or entire streams need to be surveyed, a systematic approach such as a modified BVET habitat survey is appropriate.

Many of the sites that were sampled for fish in 1993 could not be sampled in 2002 because the streams were dry, making it difficult to compare results between years. Dry conditions could account for the loss of several species, especially species that were captured at only a few sites in 1993. However, several Centrarchids and Cyprinids, particularly *Notropis* species that were found at multiple sites in 1993 were not captured in 2002. Because changes in species presence due to dewatering can confound interpretation of results at individual sites it may be more meaningful to examine species gain and loss at the watershed level. Such examination could be facilitated by the use of a GIS application. In addition to fish population information, the GIS could include stream habitat attributes to help explain differences in populations within and among watersheds.

The common shiner (*Luxilus cornutus*) was reported at several sites in 1993, however this species is not listed in the Fishes of South Carolina (Rhode et al. 2001) and would be well outside its reported range if found in South Carolina (Page and Burr 1991). The species was not reported as captured in 2002. Additional monitoring is needed to determine if this or other non-native species occupy FMNF streams.

We recommend that the SNF develop and document a standard electrofishing protocol for piedmont streams and continue its effort to inventory its fish populations. The protocol should include instructions to measure and weigh a random sample of each species captured to provide size and age structure information. Anderson and Neumann (1996) recommend measuring 100 stock-sized fish to provide sufficient data for histogram analysis, but there is no published standard sample size for measuring the entire range of sizes for a species (Vokoun et al. 2001). Measuring hundreds of fish minimizes the effects of variance in data analysis, however it also decreases the number of sites that can be sampled. As a compromise we recommend the following:

For each species captured:

| | One year class present or little size variation | Multiple year classes present or large size variation |
|-----------------------------------|---|---|
| Less than 30 individuals captured | Measure all individuals | Measure all individuals |
| 30 or more individuals captured | Measure at least 30 individuals | Measure all or 100 individuals, whichever is the smaller number |

This should be considered an interim recommendation, open to further analysis, review and adjustment to meet the data requirements of the SNF.

The SNF should also consider designating a standardized reach length proportional to stream size, for example: a sample reach 30 times the average stream width. Such methods ensure that sampling effort is proportional to stream size, that sample reaches include several different habitat unit types, and increases the probability that the majority of species present in the stream are captured (Angermeier and Smogor 1995, Warren et al 2002).

Repeated and consistent application of standard fish and habitat sampling protocols will allow the FMNF to develop a dataset that can be analyzed for differences between and among streams and drainages over time. Fish population data could be combined with habitat data in a GIS application to examine for relationships between habitat characteristics and fish community or population structure. Such a product would provide a powerful tool for evaluating and adapting FMNF management practices.

¹ Husky and fex21 are trademarks of Itronix (UK) Limited*

*use of trade name does not imply endorsement

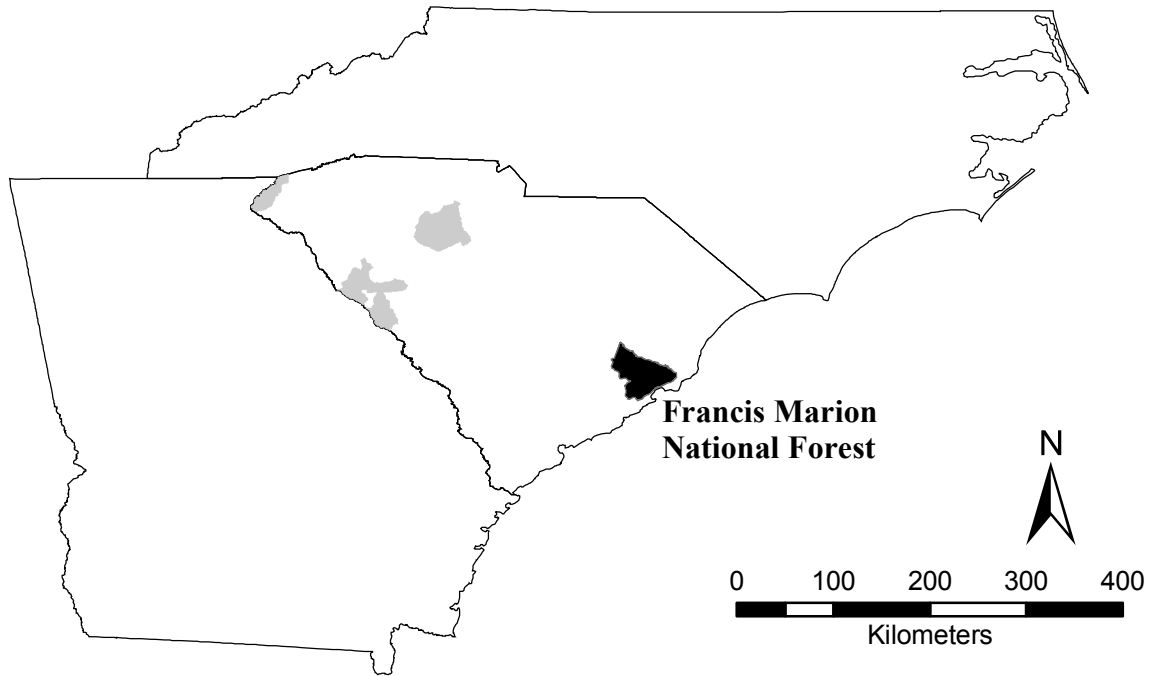
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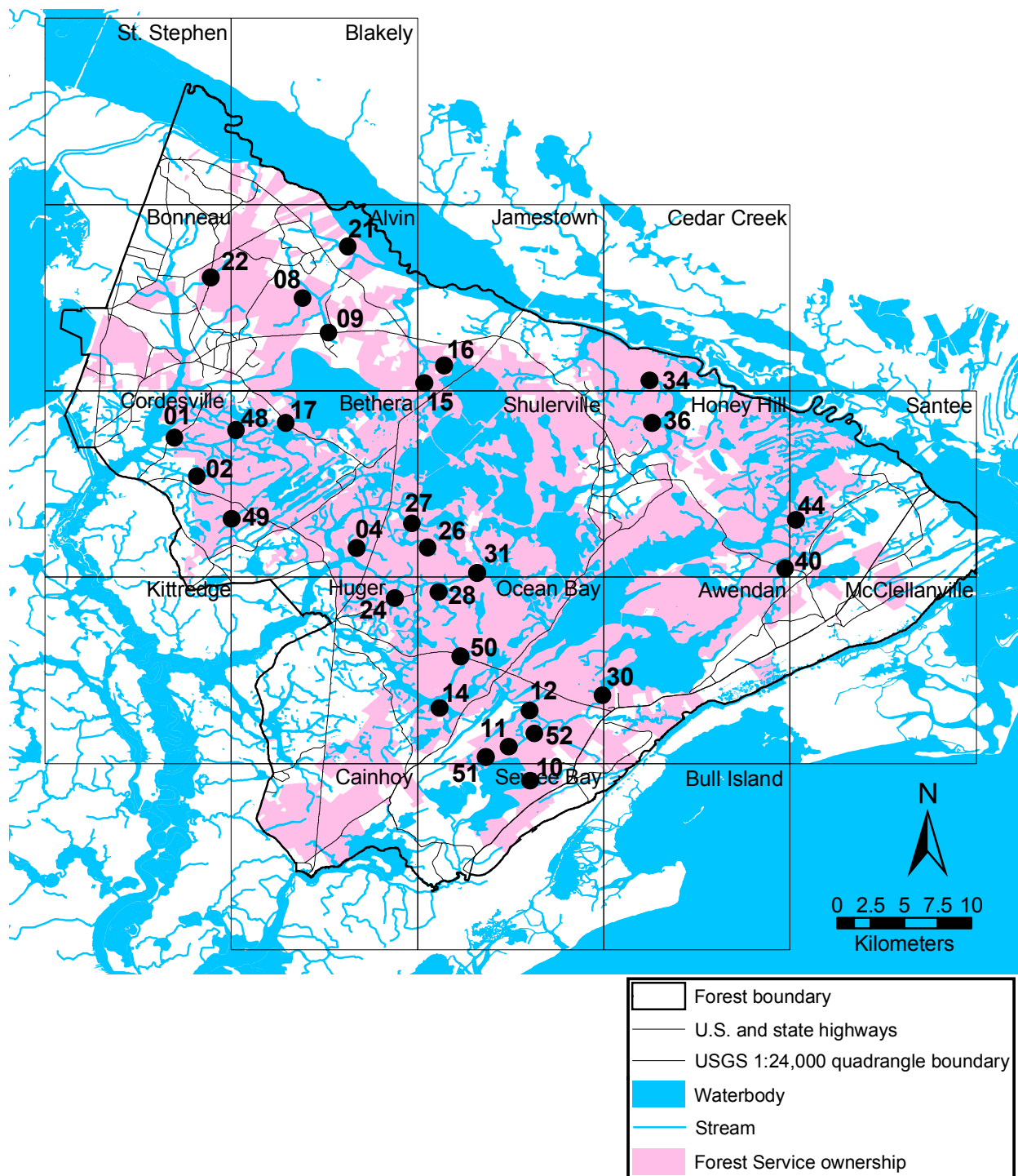
Acknowledgements

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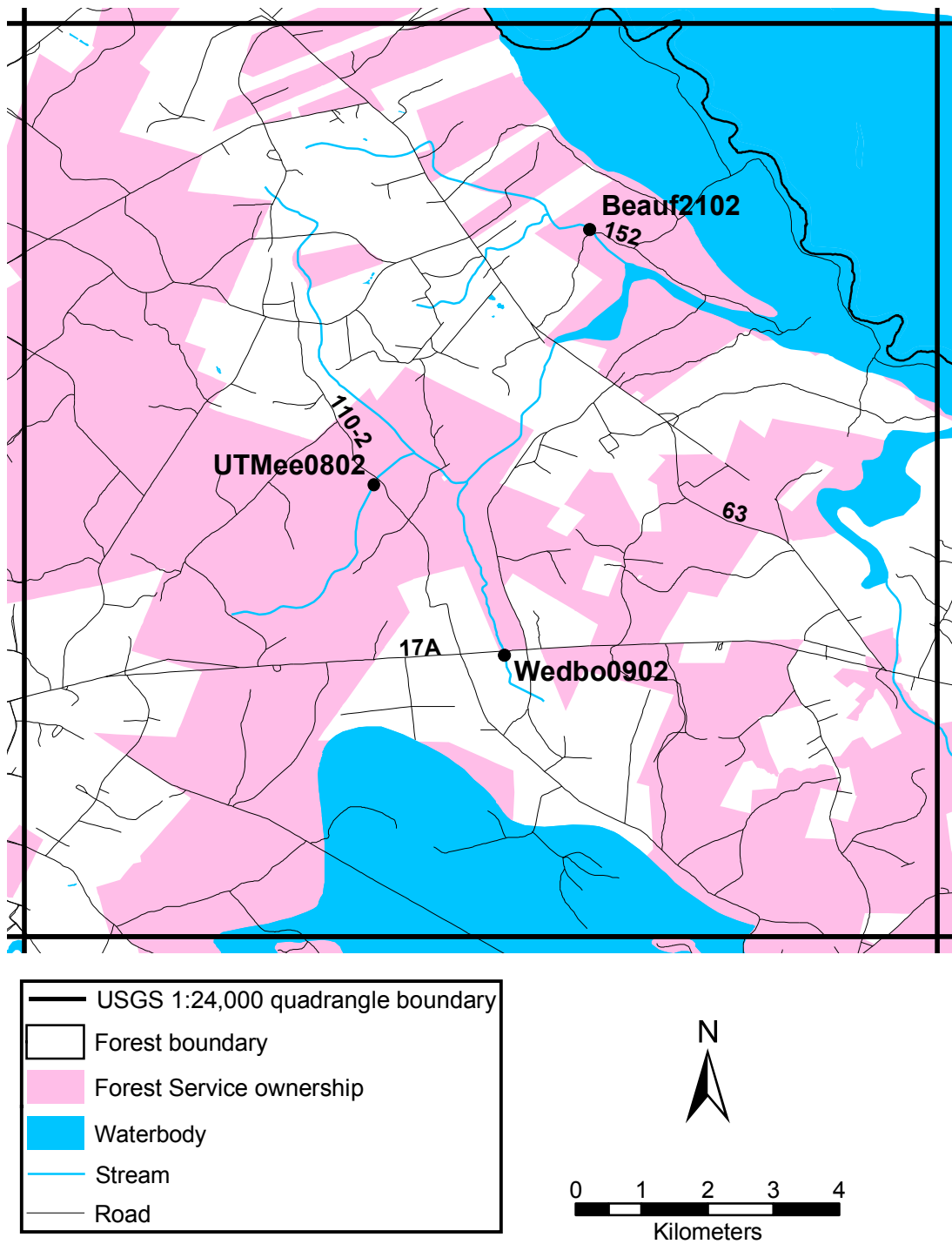
Survey Area Maps



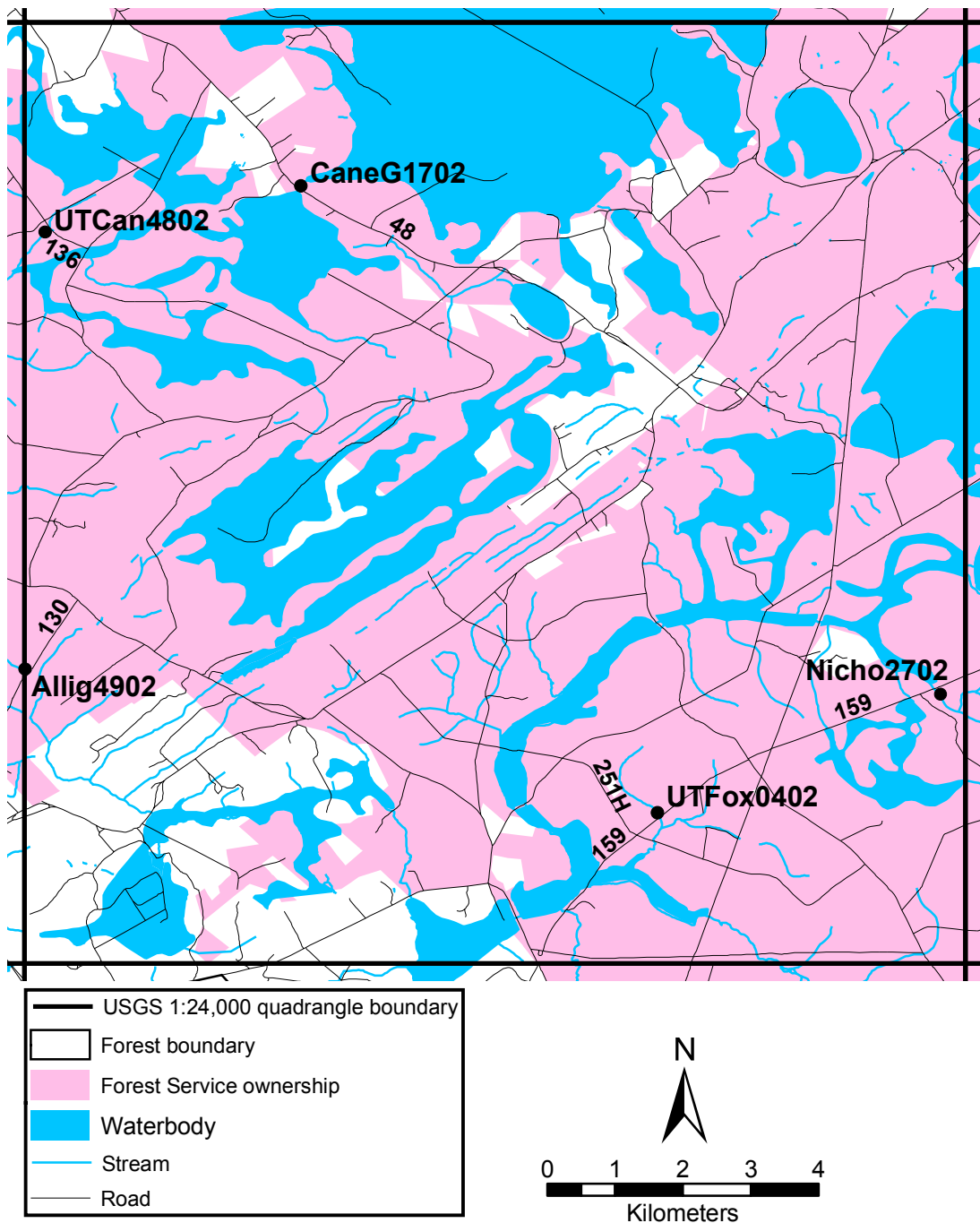
Location of the Francis Marion National Forest (black) in South Carolina.



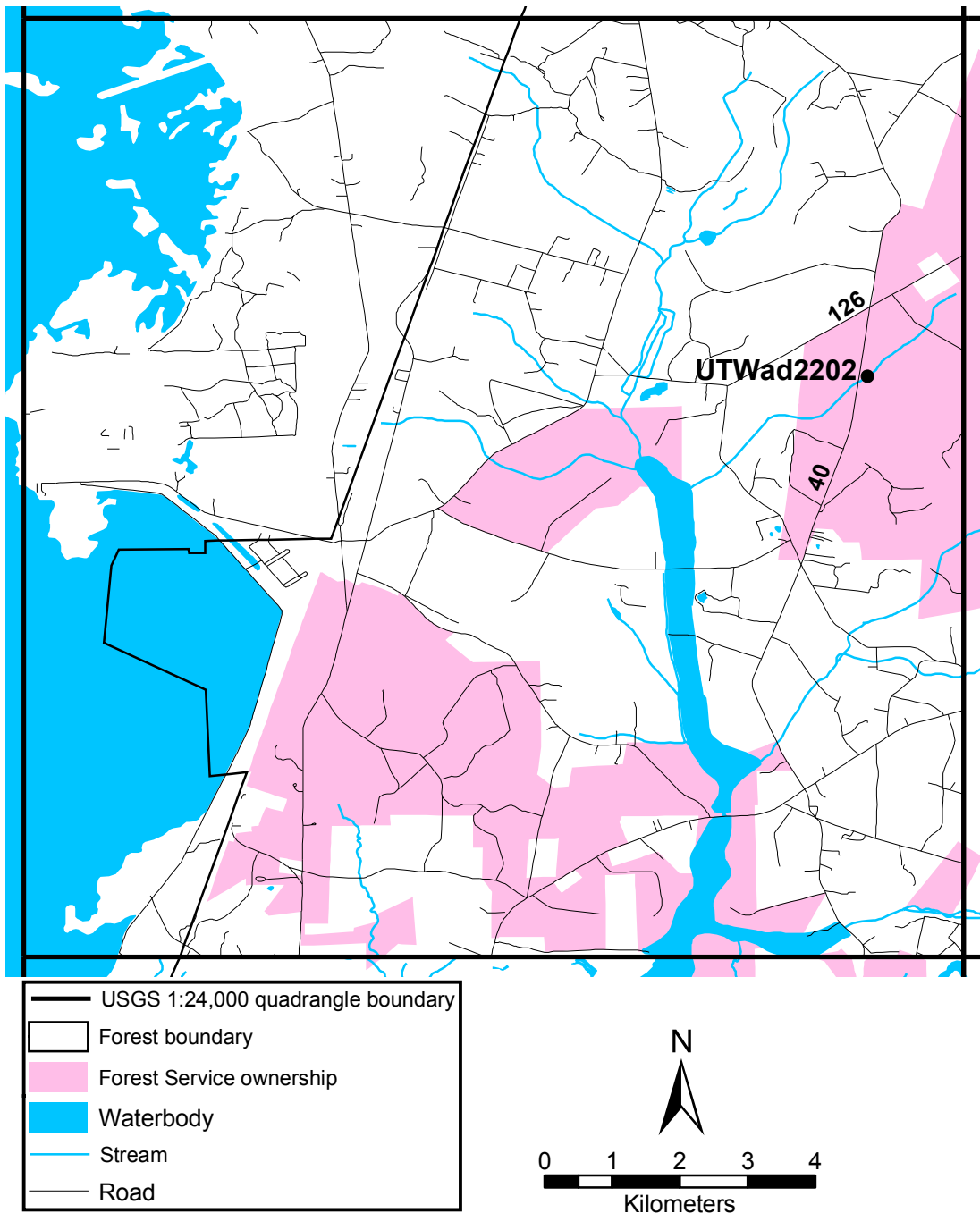
Location of electrofishing sites (closed circles) on the Francis Marion National Forest visited during summer 2002. Site numbers correspond to sites visited in Hansbarger and Dean (1994). USGS 1:24,000 quadrangle names are shown in the upper right hand corner of each quadrangle boundary box. Individual quadrangle maps containing 2002 survey sites are presented in the following pages.



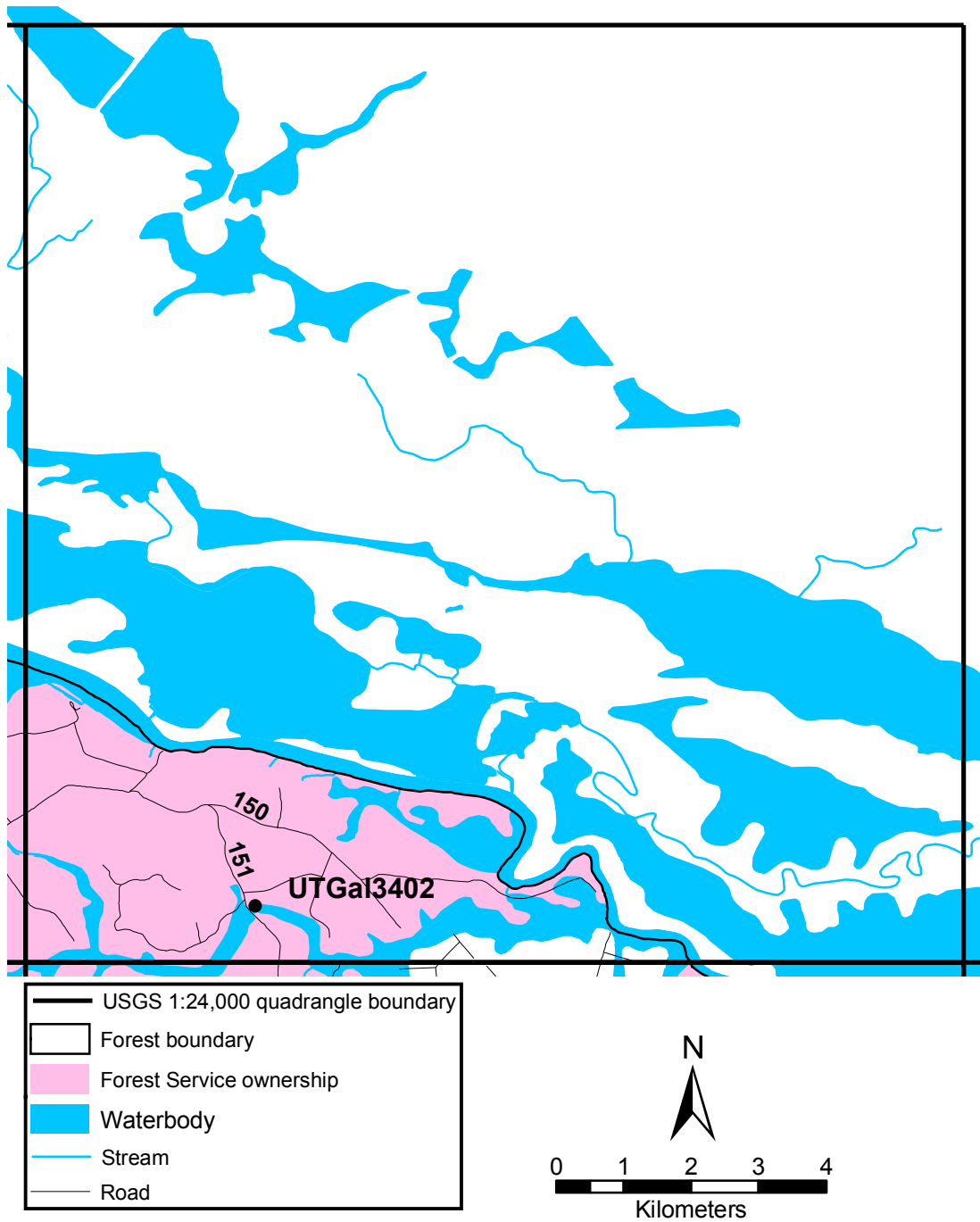
Sites surveyed on the Alvin quadrangle in summer 2002.



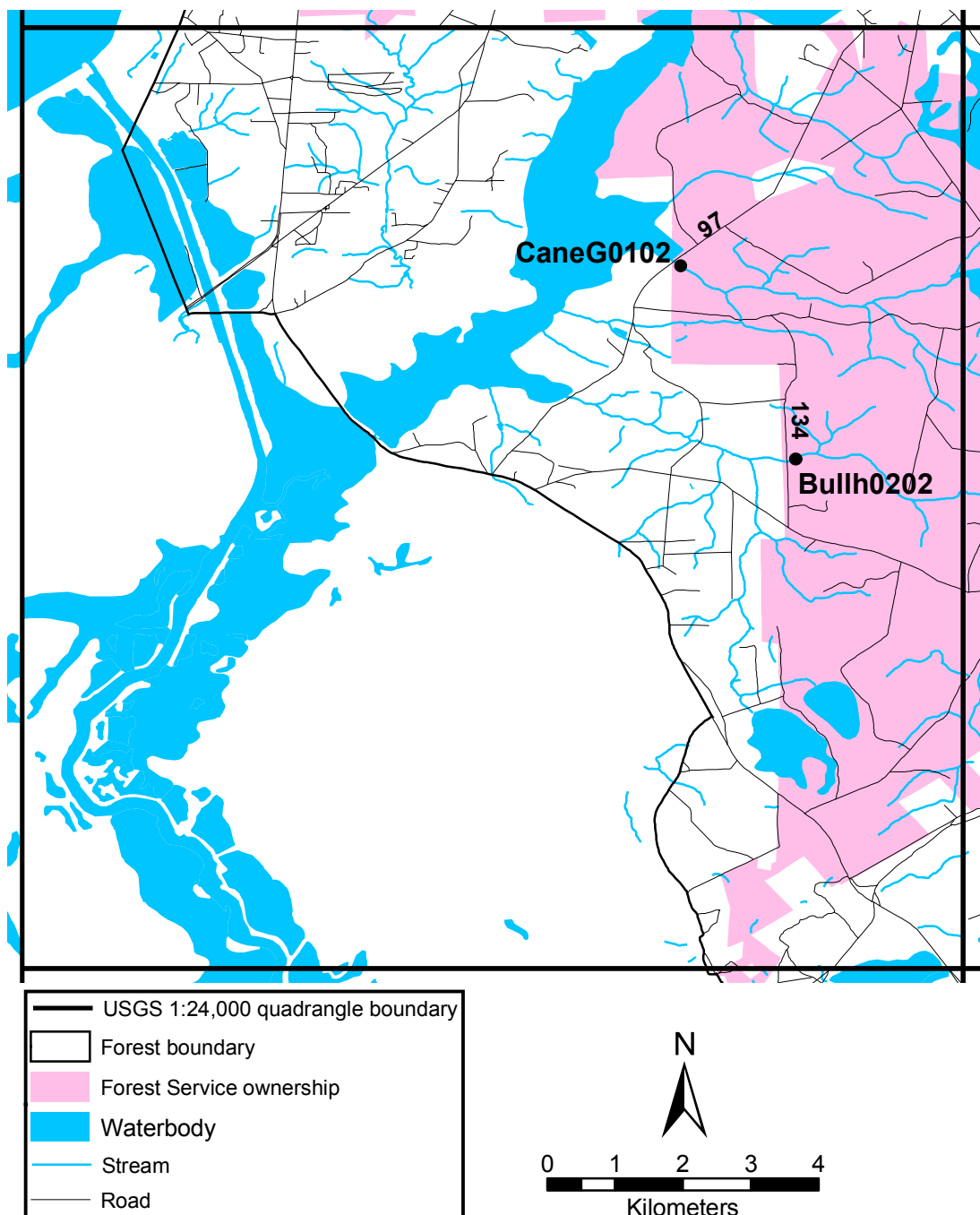
Sites surveyed on the Bethera quadrangle in summer 2002.



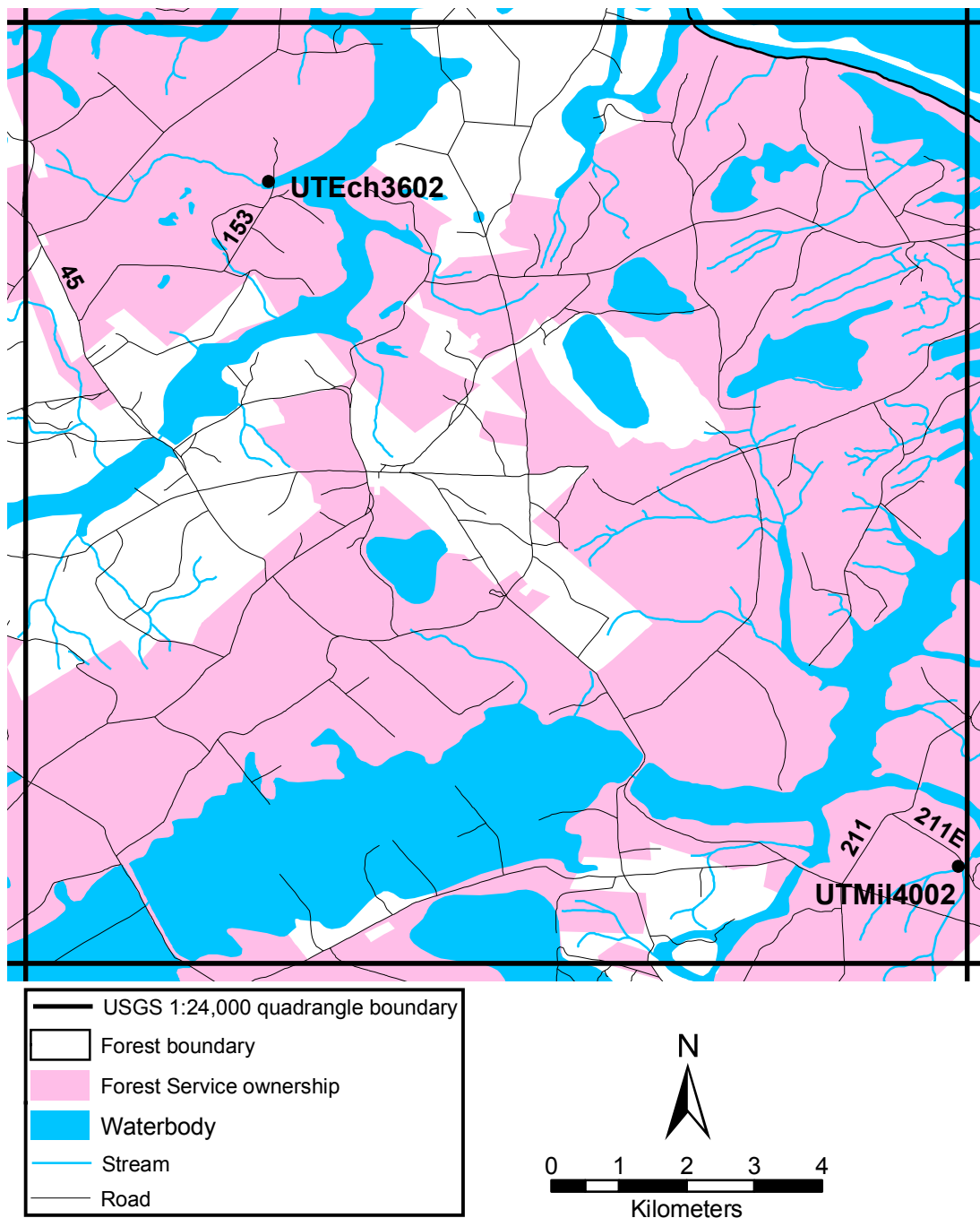
Sites surveyed on the Bonneau quadrangle in summer 2002.



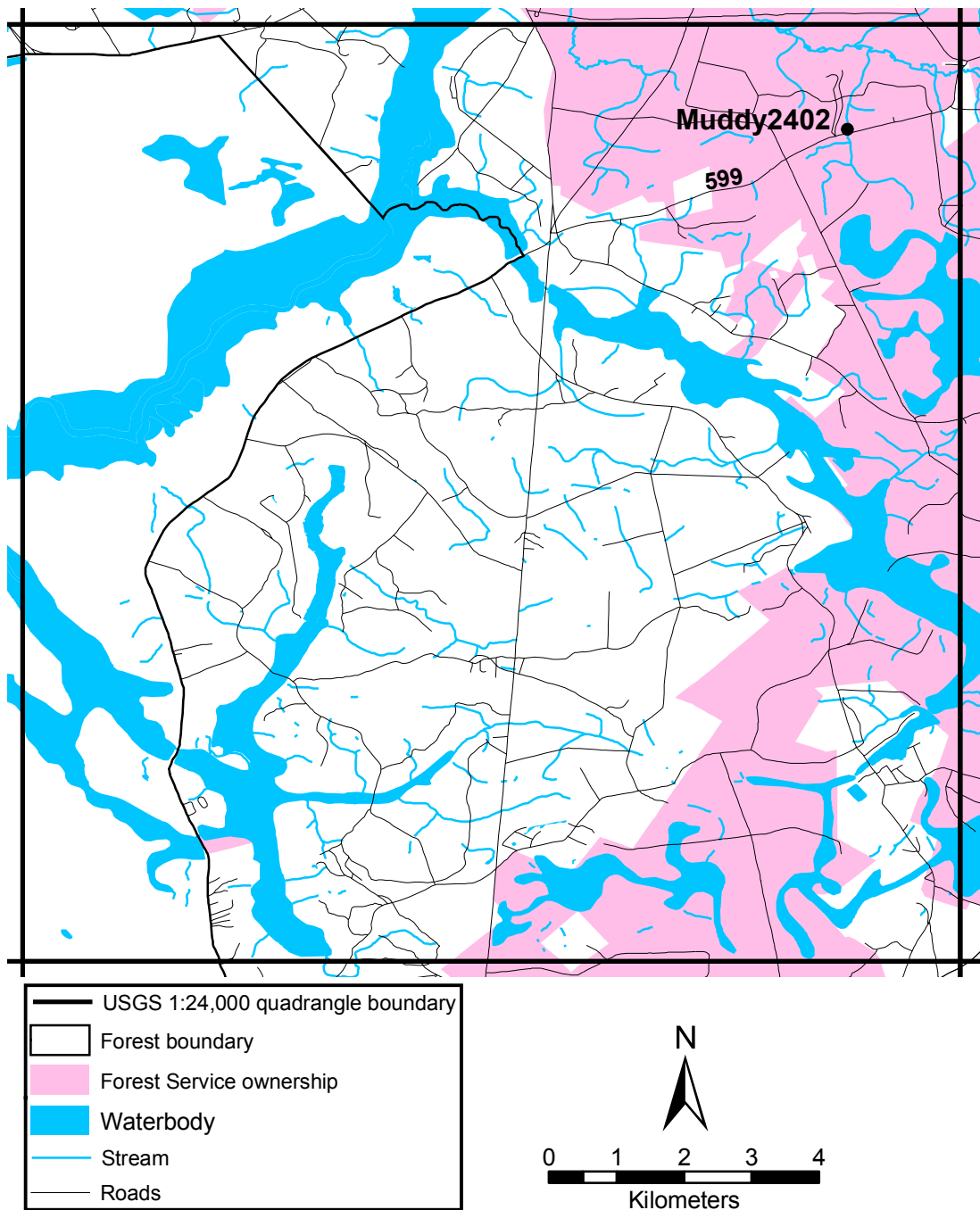
Sites surveyed on the Cedar Creek quadrangle in summer 2002.



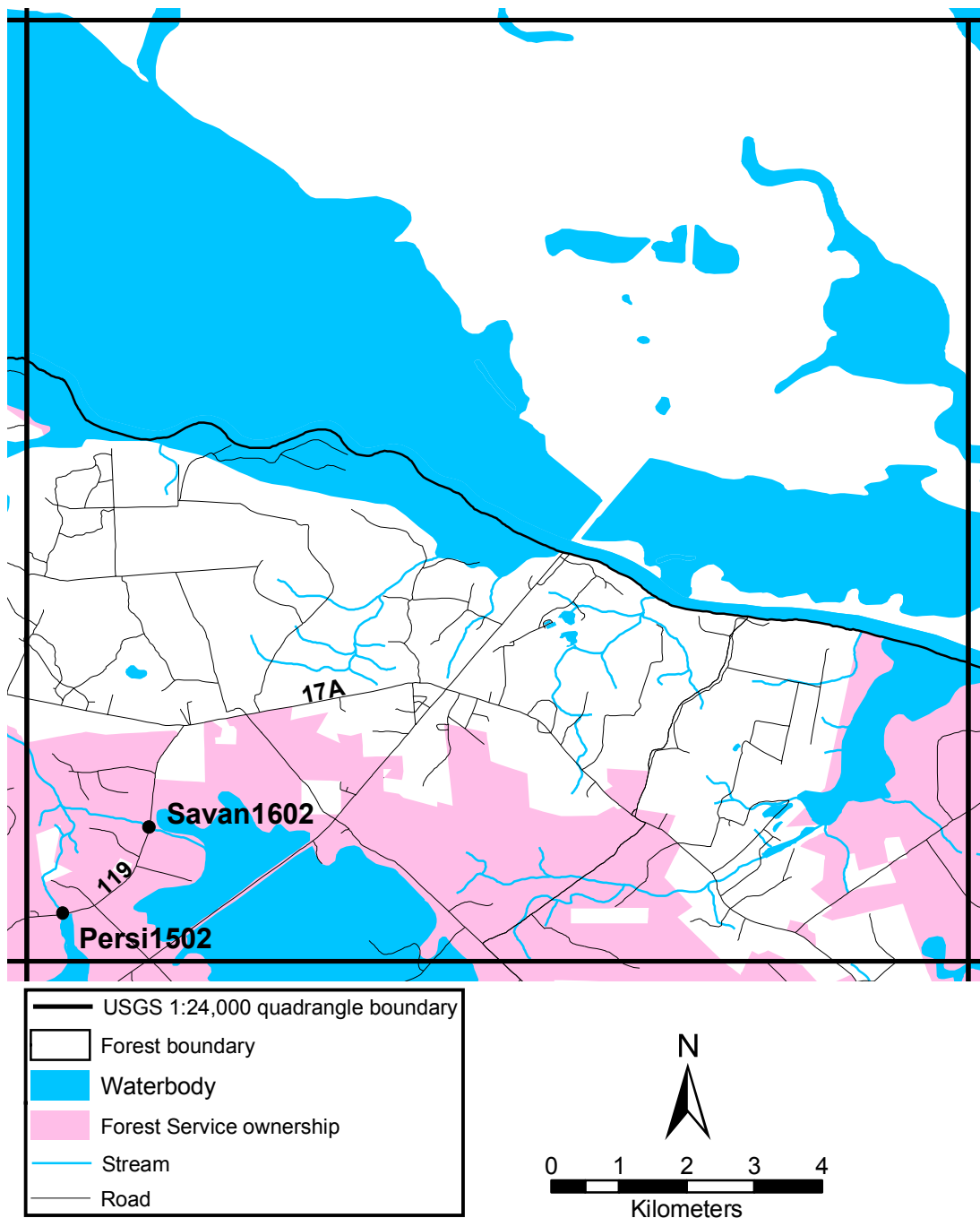
Sites surveyed on the Cordesville quadrangle in summer 2002.



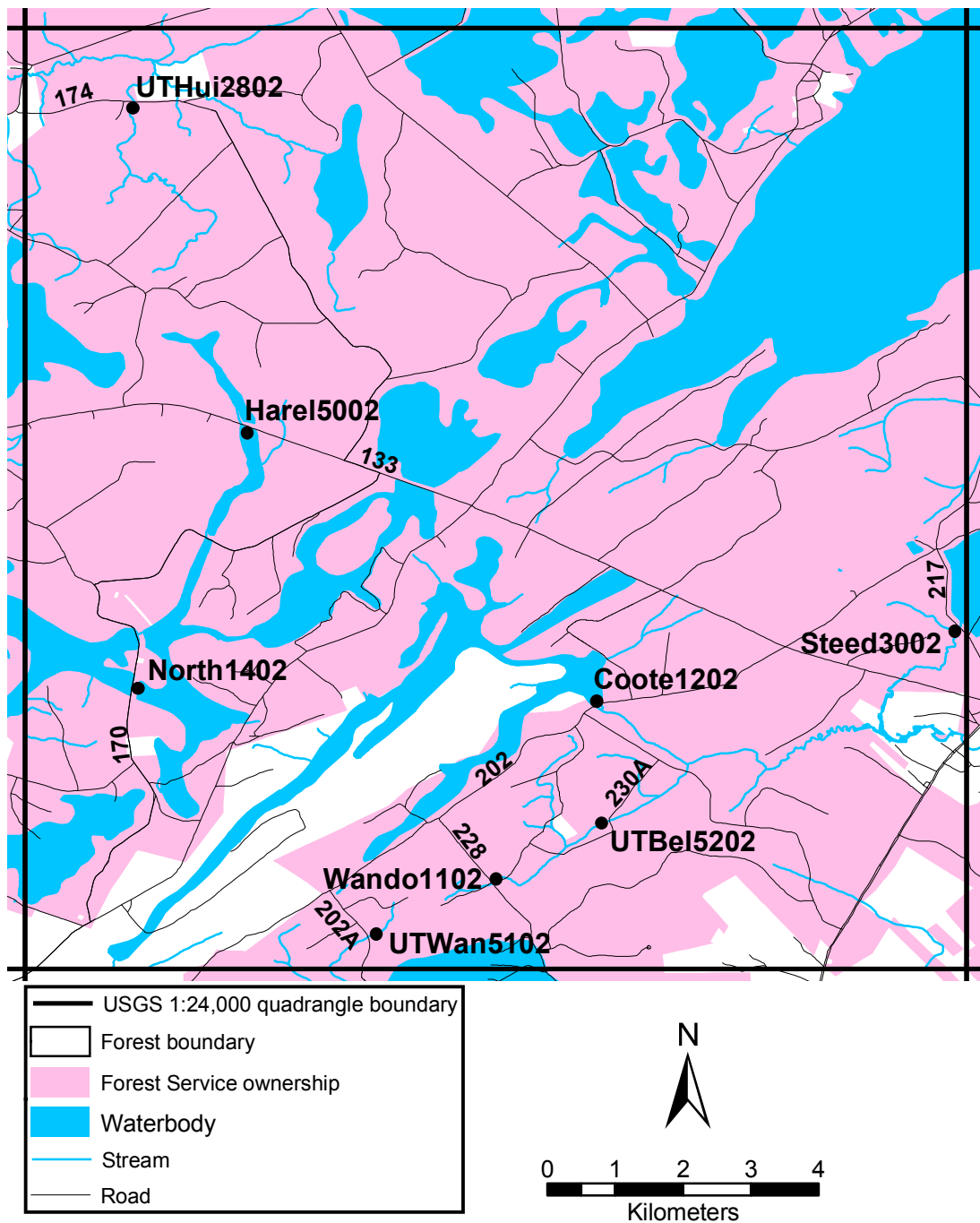
Sites surveyed on the Honey Hill quadrangle in summer 2002.



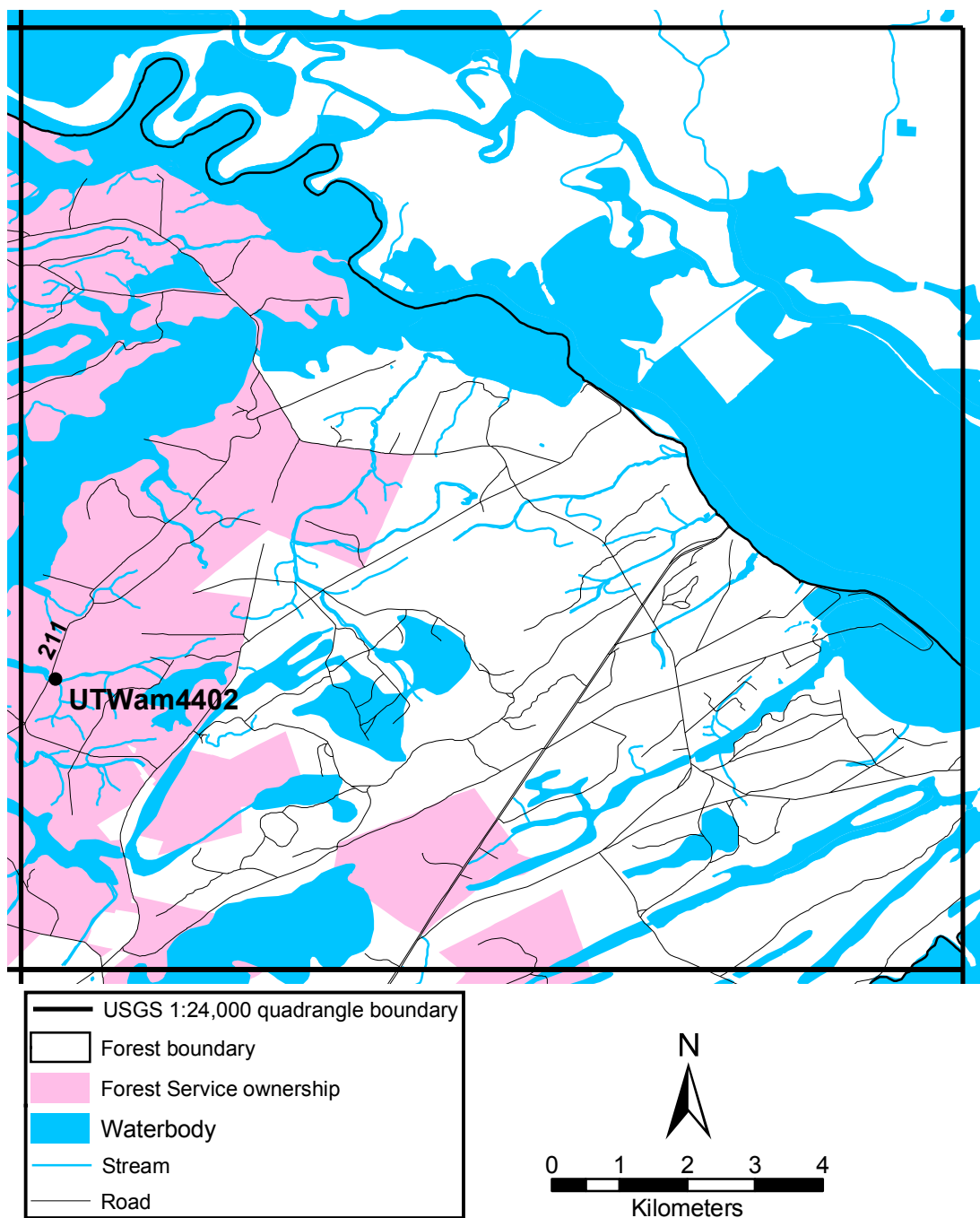
Sites surveyed on the Huger quadrangle in summer 2002.



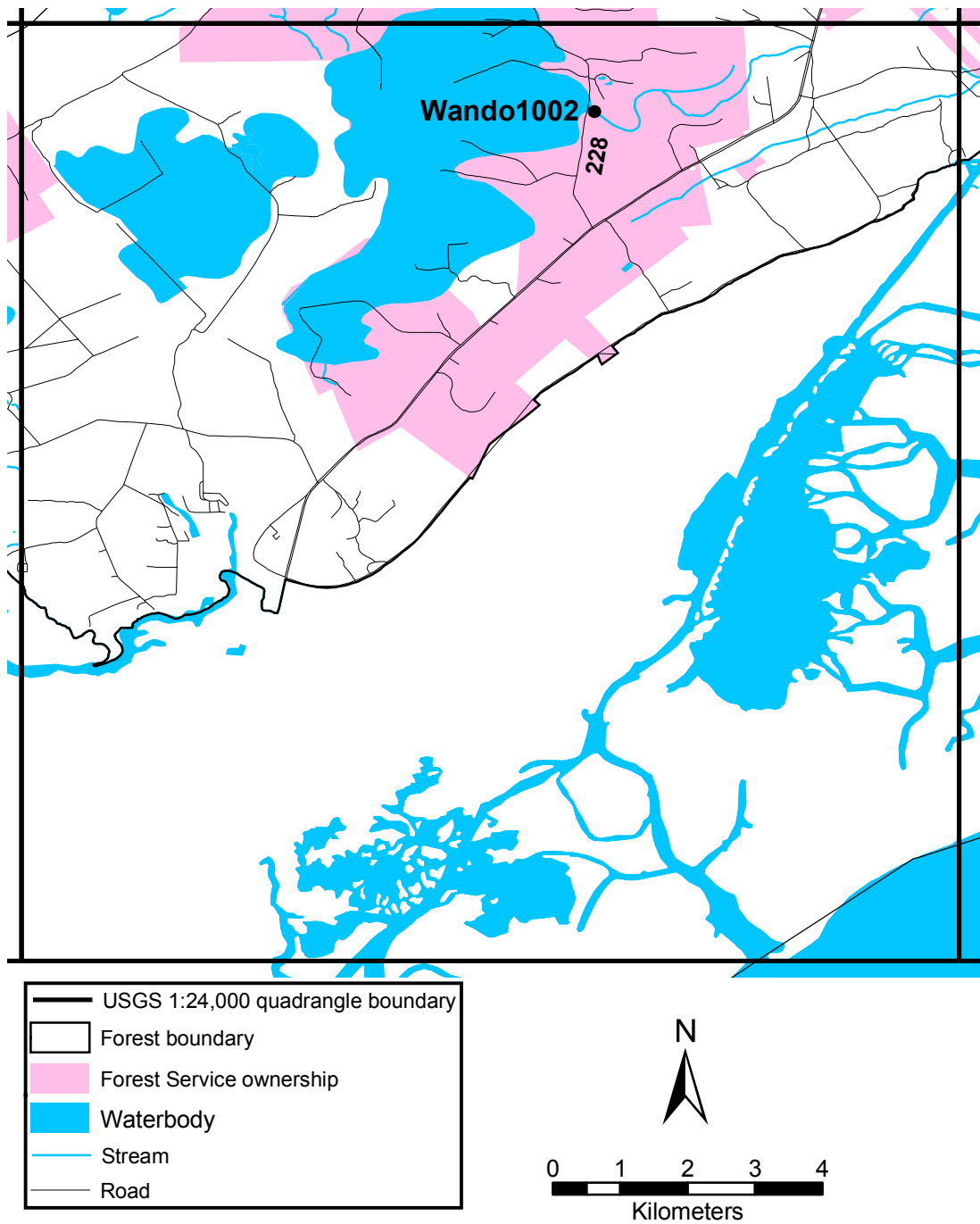
Sites surveyed on the Jamestown quadrangle in summer 2002.



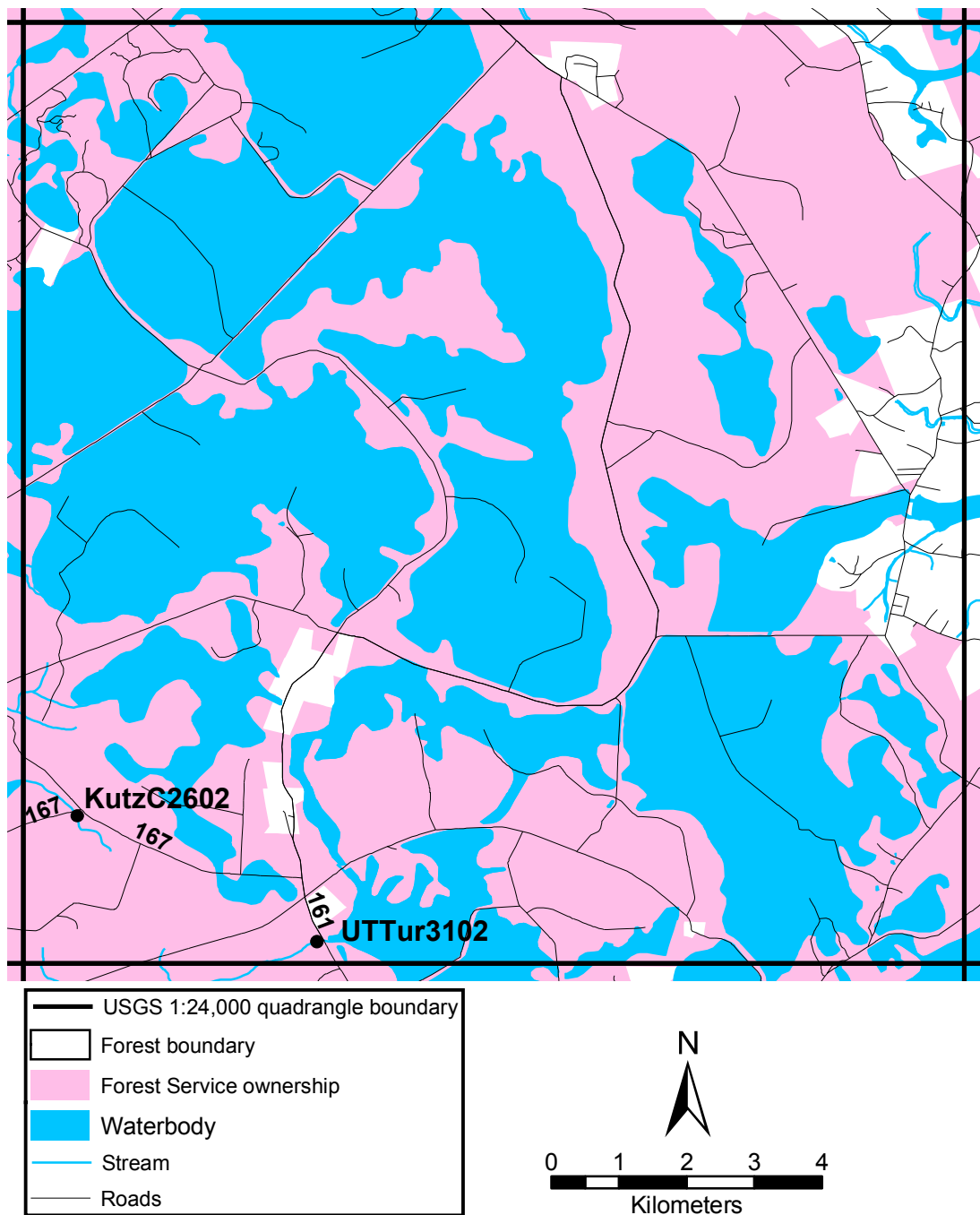
Sites surveyed on the Ocean Bay quadrangle in summer 2002.



Sites surveyed on the Santee quadrangle in summer 2002.



Sites surveyed on the Sewee Bay quadrangle in summer 2002.



Sites surveyed on the Shulerville quadrangle in summer 2002.

Table 1. List of sites visited in the Francis Marion National Forest during summer 2002. Site numbers correspond to sites in Harnsbarger and Dean (1994).

| Stream | Site # | Quadrangle | Habitat Data Collected in 2002 |
|---------------------------------------|---------------|-------------------|---------------------------------------|
| Alligator Creek | 49 | Bethera | no |
| Beauford Branch Creek | 21 | Alvin | no |
| Un-named trib of Bell Creek | 52 | Ocean Bay | no |
| Bullhead Run | 2 | Cordesville | no |
| Cane Gully Branch | 1 | Cordesville | no |
| Cane Gully Branch | 17 | Bethera | no |
| Un-named trib of Cane Gully Branch | 48 | Bethera | no |
| Cooter Creek | 12 | Ocean Bay | yes |
| Un-named trib of Echaw Creek | 36 | Honey Hill | yes |
| Un-named trib of Fox Gully Branch | 4 | Bethera | no |
| Un-named Trib of Gal Branch | 34 | Cedar Creek | yes |
| Harleston Dam Creek | 50 | Ocean Bay | yes |
| Un-named trib of Huitt Branch | 28 | Ocean Bay | no |
| Kutz Creek | 26 | Shulerville | no |
| Un-named trib of Meeting House Branch | 8 | Alvin | no |
| Un-named trib of Mill Branch | 40 | Honey Hill | yes |
| Muddy Creek | 24 | Huger | no |
| Nicholson Creek | 27 | Bethera | no |
| Northhampton Creek | 14 | Ocean Bay | yes |
| Persimmons Branch | 15 | Alvin | no |
| Savanna Creek | 16 | Alvin | no |
| Steed Creek | 30 | Ocean Bay | yes |
| Un-named trib of Turkey Creek | 31 | Shulerville | no |
| Un-named trib of Wadboo Swamp | 22 | Bonneau | no |
| Un-named trib of Wambaw Creek | 44 | Santee | yes |
| Wando River | 10 | Sewee Bay | no |
| Wando RIver | 11 | Ocean Bay | no |
| Un-named trib of Wando Swamp | 51 | Ocean Bay | no |
| Wedboo Swamp | 9 | Alvin | yes |

Table 2. Number of sites at which species were captured by backpack electrofishing (out of 29 sites sampled in both 1993 and 2002). ‘Total’ is the total number of sites at which species were captured. ‘Gained’ is the number of sites where the species was captured in 2002 but not 1993. ‘Lost’ is the number of sites where the species was captured in 1993 but not 2002 (includes sites that were not sampled because they were dry or swamp). ‘Dry’ and ‘Swamp’ are the number of sites from which the species was lost in 2002 because sites were dry or swamp (i.e. could not be sampled).

| Species | 1993 Total | 2002 Total | 2002 vs. 1993 | | | |
|--------------------------------|---------------|---------------|---------------|------|-----|-------|
| | | | Gained | Lost | Dry | Swamp |
| <u>Amblyopsidae</u> | | | | | | |
| <i>Chologaster cornuta</i> | 0 | 1 | 1 | 0 | -- | -- |
| <u>Amiidae</u> | | | | | | |
| <i>Amia calva</i> | 1 | 0 | 0 | 1 | 1 | 0 |
| <u>Anguillidae</u> | | | | | | |
| <i>Anguilla rostrata</i> | 2 | 5 | 4 | 1 | 1 | 0 |
| <u>Aphredoderidae</u> | | | | | | |
| <i>Aphredoderus sayanus</i> | 13 | 6 | 4 | 11 | 8 | 0 |
| <u>Atherinidae</u> | | | | | | |
| <i>Labidesthes sicculus</i> | 1 | 0 | 0 | 1 | 0 | 0 |
| <u>Catostomidae</u> | | | | | | |
| <i>Erimyzon oblongus</i> | 7 | 1 | 0 | 6 | 3 | 0 |
| <i>Minytrema melanops</i> | 1 | 0 | 0 | 1 | 1 | 0 |
| <u>Centrarchidae</u> | | | | | | |
| <i>Acantharchus pomotis</i> | 12 | 2 | 1 | 11 | 7 | 0 |
| <i>Centrarchus macropterus</i> | 11 | 2 | 1 | 10 | 4 | 1 |
| <i>Enneacanthus gloriosus</i> | 3 | 4 | 3 | 2 | 0 | 0 |
| <i>Enneacanthus obesus</i> | 3 | 0 | 0 | 3 | 0 | 0 |
| <i>Lepomis auriatus</i> | 4 | 0 | 0 | 4 | 3 | 0 |
| <i>Lepomis gulosus</i> | 7 | 5 | 5 | 7 | 3 | 1 |
| <i>Lepomis macrochirus</i> | 9 | 1 | 0 | 8 | 5 | 0 |
| <i>Lepomis punctatus</i> | 11 | 0 | 0 | 11 | 7 | 0 |
| <i>Micropterus salmoides</i> | 5 | 0 | 0 | 5 | 3 | 0 |
| <u>Clupeidae</u> | | | | | | |
| <i>Dorosoma cepedianum</i> | 1 | 0 | 0 | 1 | 1 | 0 |
| <u>Cyprinidae</u> | | | | | | |
| <i>Luxilus cornutus</i> | 6 | 0 | 0 | 6 | 3 | 0 |
| <i>Notemigonus crysoleucas</i> | 5 | 3 | 2 | 4 | 1 | 1 |
| <i>Notropis chalybaeus</i> | 8 | 0 | 0 | 8 | 3 | 1 |
| <i>Notropis cummingsae</i> | 5 | 0 | 0 | 5 | 3 | 0 |
| <i>Notropis petersoni</i> | 15 | 1 | 1 | 15 | 8 | 0 |
| <u>Esocidae</u> | | | | | | |
| <i>Esox americanus</i> | 21 | 5 | 0 | 16 | 11 | 0 |
| <i>Esox niger</i> | 3 | 0 | 0 | 3 | 2 | 0 |

Table 2.. continued...

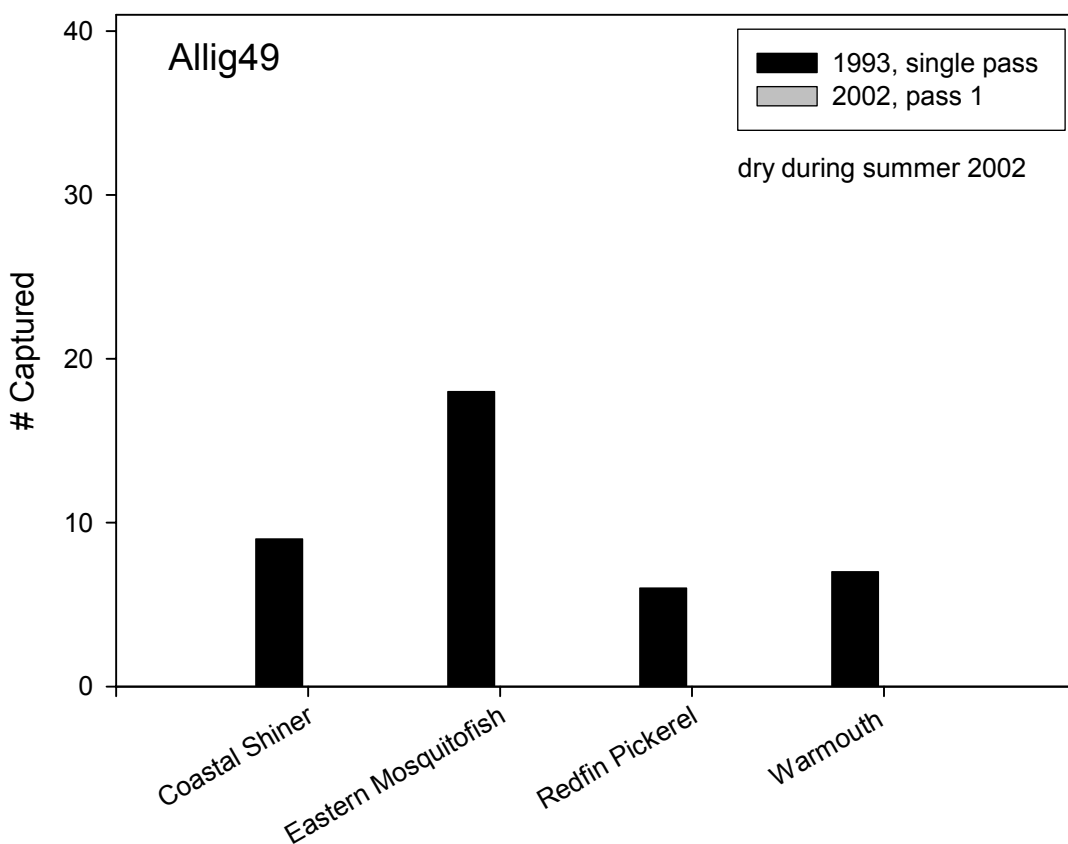
| Species | 1993 Total | 2002 Total | 2002 vs. 1993 | | | |
|-----------------------------|---------------|---------------|---------------|------|-----|-------|
| | | | Gained | Lost | Dry | Swamp |
| <u>Elassomatidae</u> | | | | | | |
| <i>Elassoma zonatum</i> | 2 | 3 | 3 | 2 | 2 | 0 |
| <u>Fundulidae</u> | | | | | | |
| <i>Fundulus lineolatus</i> | 2 | 0 | 0 | 2 | 1 | 0 |
| <u>Ictaluridae</u> | | | | | | |
| <i>Ameiurus natalis</i> | 3 | 2 | 2 | 3 | 1 | 0 |
| <i>Ameiurus nebulosis</i> | 3 | 0 | 0 | 3 | 3 | 0 |
| <i>Noturus gyrinus</i> | 2 | 0 | 0 | 2 | 1 | 0 |
| <u>Percidae</u> | | | | | | |
| <i>Etheostoma fusiforme</i> | 2 | 1 | 1 | 2 | 1 | 0 |
| <u>Poeciliidae</u> | | | | | | |
| <i>Gambusia holbrooki</i> | 26 | 9 | 2 | 19 | 15 | 1 |
| <i>Heterandria formosa</i> | 0 | 2 | 2 | 0 | -- | -- |
| <u>Soleidae</u> | | | | | | |
| <i>Trinectes maculatus</i> | 0 | 1 | 1 | 0 | -- | -- |
| <u>Umbridae</u> | | | | | | |
| <i>Umbra pygmaea</i> | 8 | 3 | 3 | 8 | 4 | 0 |

Appendix A: Stream Summaries

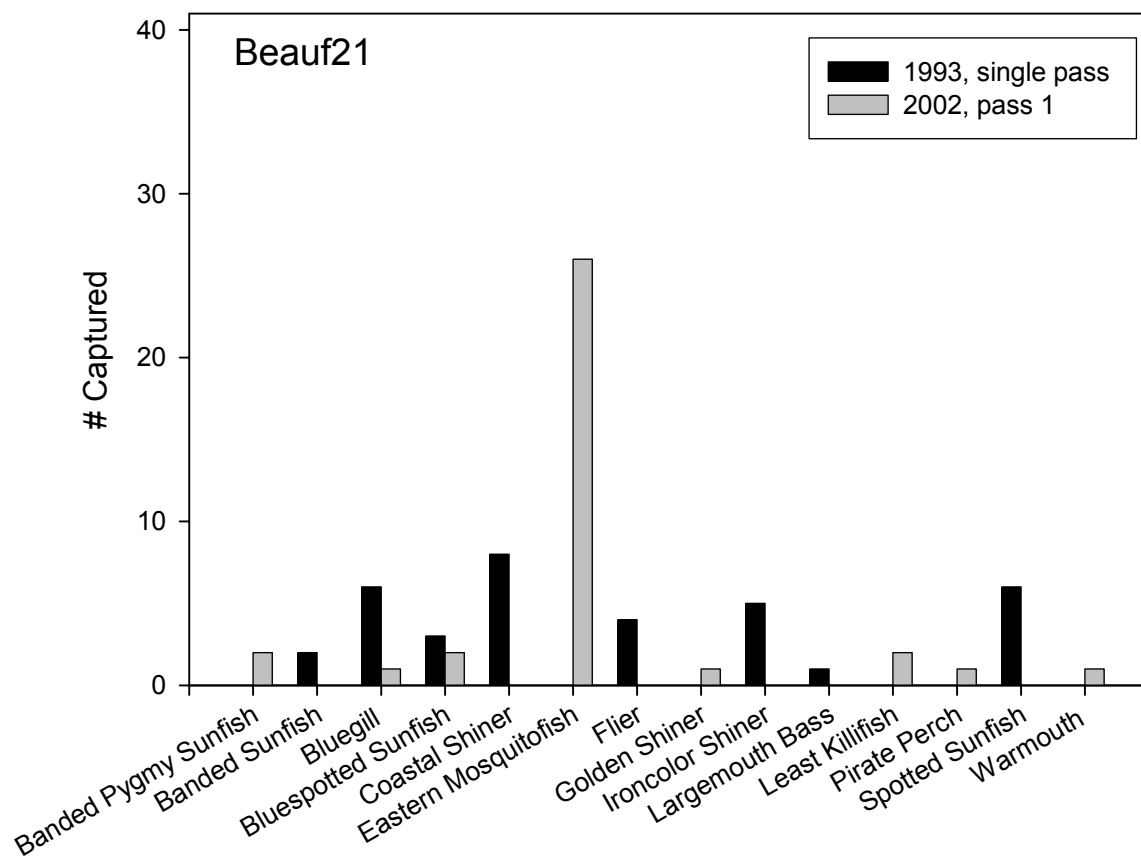
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| Bullhead Run Site 02, Bullh0202 | 31 |
| Cane Gully Branch Site 01, CaneG0102 | 32 |
| Cane Gully Branch Site 17, CaneG1702 | 33 |
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| Cooter Creek Site 12, Coot1202 | 35 |
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| Un-named Tributary of Fox Gully Branch Site 04, UTFox0402 | 37 |
| Un-named Tributary of Gal Branch Site 34, UTGal3402 | 38 |
| Harleston Dam Creek Site 50, Harle5002 | 39 |
| Un-named Tributary of Huitt Branch Site 28, UTHui2802 | 40 |
| Kutz Creek Site 26, KutzC2602 | 41 |
| Un-named Tributary of Meeting House Branch Site 08, UTMee0802 | 42 |
| Un-named Tributary of Mill Branch Site 40, UTMil4002 | 43 |
| Muddy Creek Site 24, Muddy2402 | 44 |
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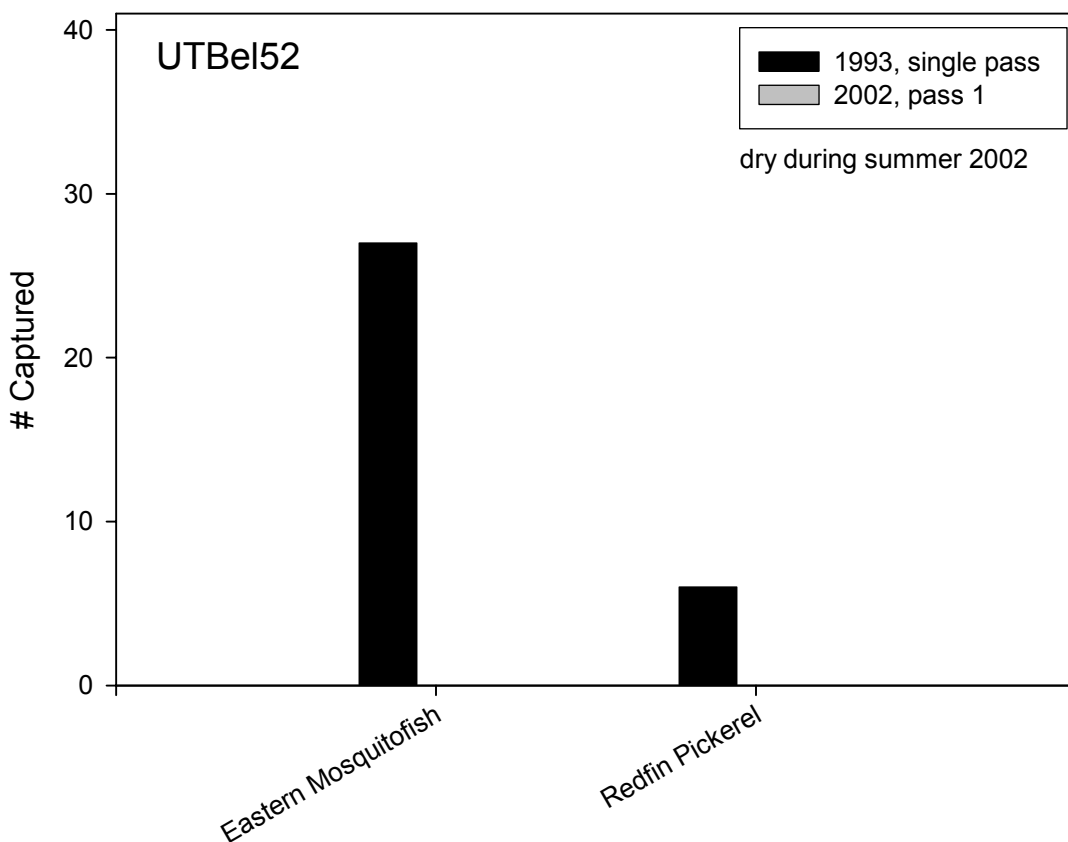
| Stream Site, ID: | Alligator Creek Site 49, Allig49 |
|------------------------------|--|
| District: | Witherbee |
| USGS Quadrangle: | Bethera |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | FS road 130 where stream crosses at culverts. |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Christine Black, Margie Brophy, Seth Coffman |
| GPS: | Allig01: N: 3670019.39 m E: 604995.61 m 64.8 ft |
| Remarks: | Stream is dry; unable to electroshock or collect habitat data. |



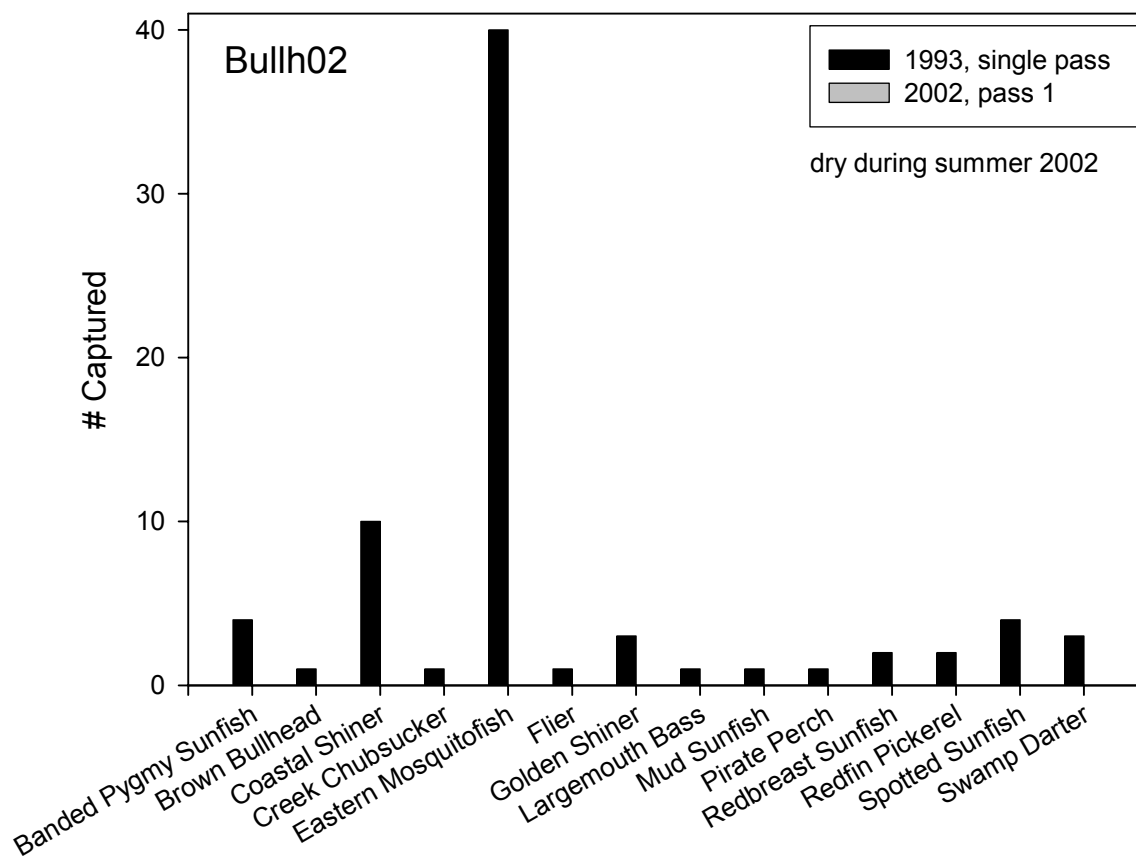
| Stream Site, ID: | Beauford Br Creek Site 21, Beauf21 |
|------------------------------|--|
| District: | Witherbee |
| USGS Quadrangle: | Alvin |
| Survey Date: | 7/11/2002 |
| Downstream Starting Point: | FS road 152 crossing |
| Total Distance Surveyed (m): | 6.0 |
| Crew: | Seth Coffman, Dan Bell, Margie Brophy, Jeanne Riley |
| GPS: | Beauf02; N3690337.51m; E612025.21m; 25.85 ft |
| Remarks: | Stream dry; electroshocked 3 pools at road culverts; no habitat data recorded. |



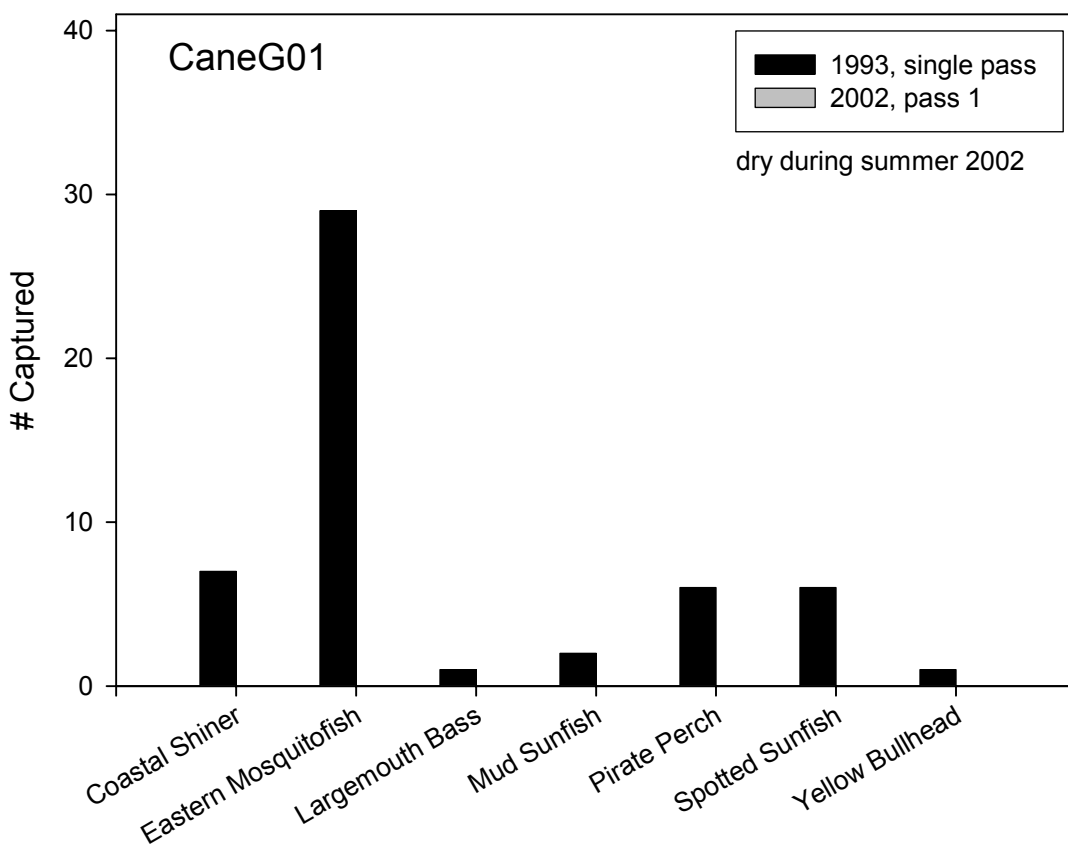
| Stream Site, ID: | Un-named Tributary of Bell Creek Site 52, UTBel52 |
|------------------------------|---|
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 7/14/2002 |
| Downstream Starting Point: | FS road 230-A at culvert crossing second culvert from FS road 230 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell Christine Black Margie Brophy Seth Coffman |
| GPS: | UTBel01: N: 3653867.36 m E: 623593.06 m 32.54 ft |
| Remarks: | Stream dry; Unable to electroshock or collect habitat data. |



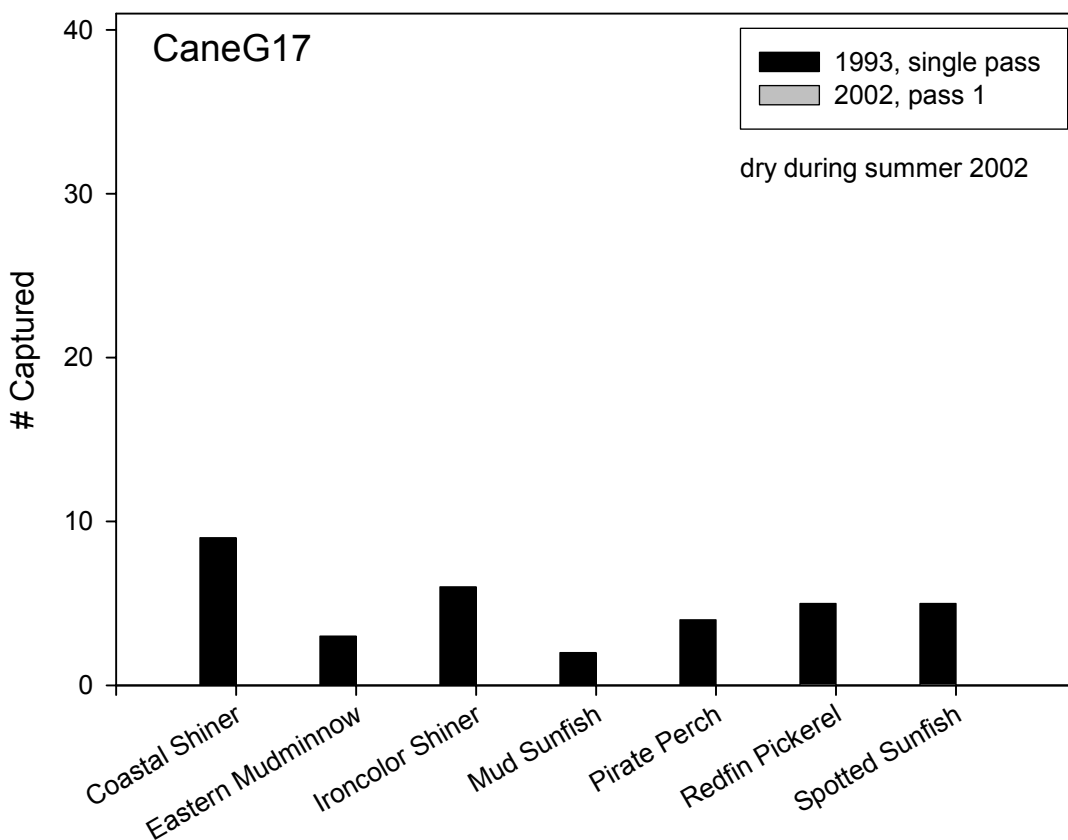
| | |
|------------------------------|---|
| Stream Site, ID: | Bullhead Run Site 02, Bullh02 |
| District: | Witherbee |
| USGS Quadrangle: | Cordesville |
| Survey Date: | 7/10/2002 |
| Downstream Starting Point: | FS road 134 crossing |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Margie Brophy, Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry; unable to electroshock or collect habitat data. |



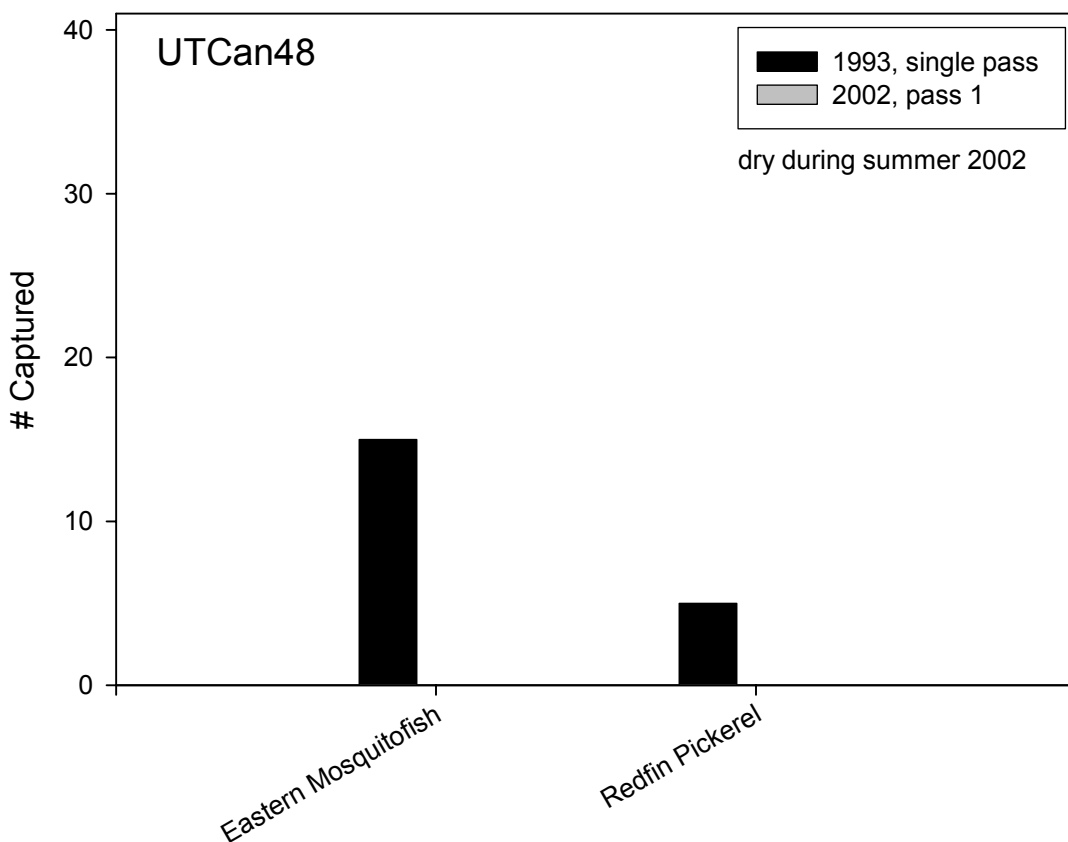
| | |
|------------------------------|--|
| Stream Site, ID: | Cane Gully Branch Site 01, CaneG01 |
| District: | Witherbee |
| USGS Quadrangle: | Cordesville |
| Survey Date: | 7/12/2002 |
| Downstream Starting Point: | State road 97 crossing |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell Margie Brophy Christine Black Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry except for pools around culverts at bridge of State road 97, which were not shocked; Mussels shells found in dry stream bed; some live mussels also found in dry channel; no habitat data recorded. |



| Stream Site, ID: | Cane Gully Branch Site 17, CaneG17 |
|------------------------------|---|
| District: | Wetherbee |
| USGS Quadrangle: | Bethera |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | State road 48 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Margie Brophy, Seth Coffman, Christine Black |
| GPS: | not recorded |
| Remarks: | Stream was dry; Unable to electroshock or collect habitat data. |



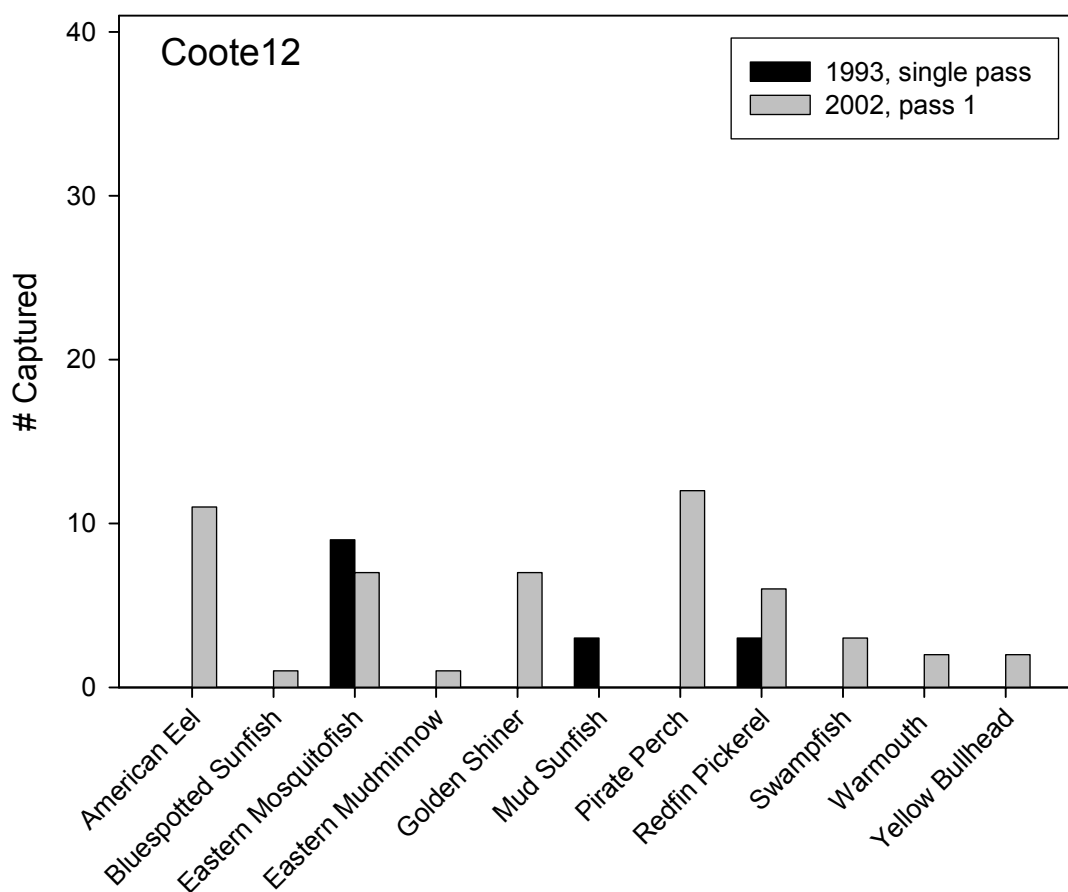
| Stream Site, ID: | Un-named Tributary of Cane Gully Branch Site 48, UTCan48 |
|------------------------------|---|
| District: | Witherbee |
| USGS Quadrangle: | Bethera |
| Survey Date: | 7/10/2002 |
| Downstream Starting Point: | FS road 136 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell Margie Brophy Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry; Unable to electroshock or collect habitat data. |



| | |
|------------------------------|---|
| Stream Site, ID: | Cooter Creek Site 12, Coote12 |
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 6/28/02 |
| Downstream Starting Point: | Starts 10 m upstream (left channel) from FS 202 {Willow Hall Road} |
| Total Distance Surveyed (m): | 100 |
| Crew: | Jeanne Riley, Seth Coffman, Margie Brophy, Daniel Bell, Tammy Thatcher, Christine Black |
| GPS: | Not recorded |
| Remarks: | No comments |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 51.5 | 2.5 | 40 | 15 | - | 3 | 1 | n | 8 | 0 | 0 | 0 |
| P | 2 | 96.3 | 3.0 | 70 | 30 | - | 3 | 1 | n | 6 | 0 | 0 | 0 |
| P | 3 | 111.2 | 2.5 | 30 | 20 | - | 3 | 1 | n | 7 | 0 | 0 | 0 |

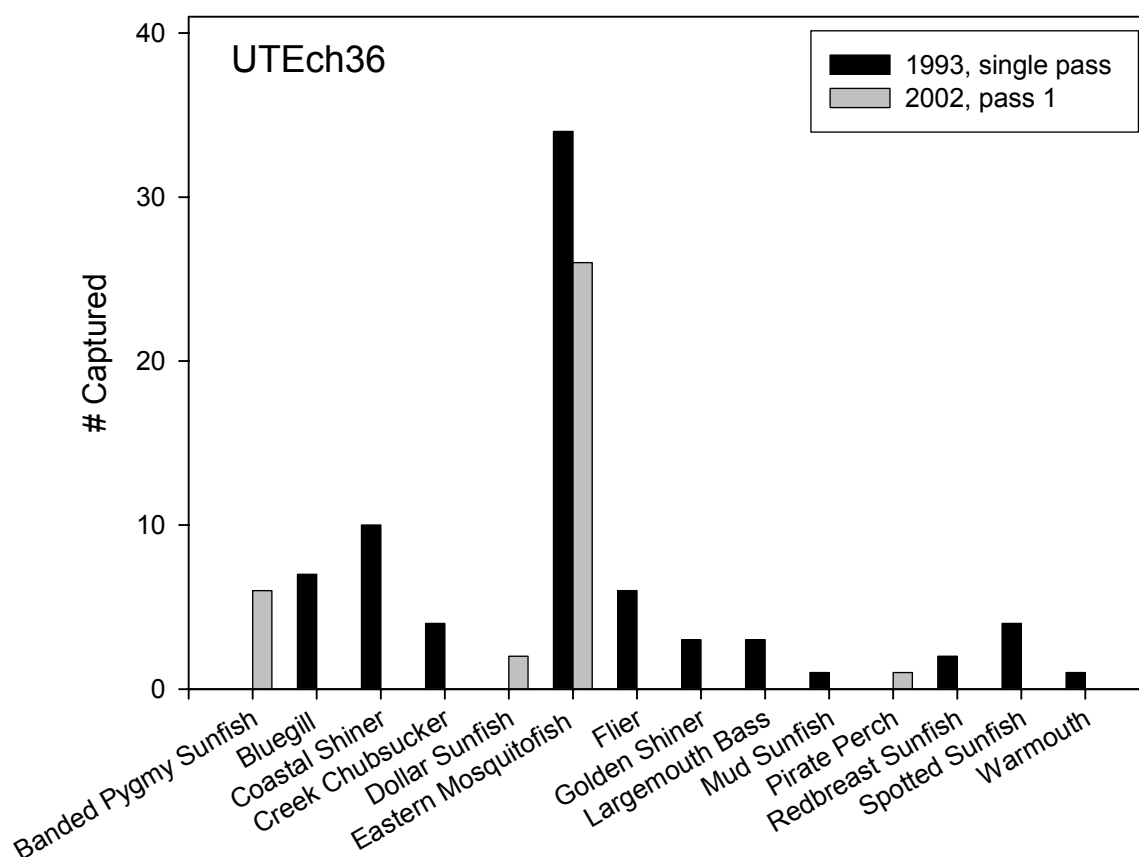
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|---------------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 2.2 | 3 | 7.3 | 15.7 | - | 26 | 6.9 | exposed roots |
| P | 2 | 4 | 5 | 45 | 19.2 | - | - | - | exposed roots |
| P | 3 | - | - | - | - | - | - | - | - |



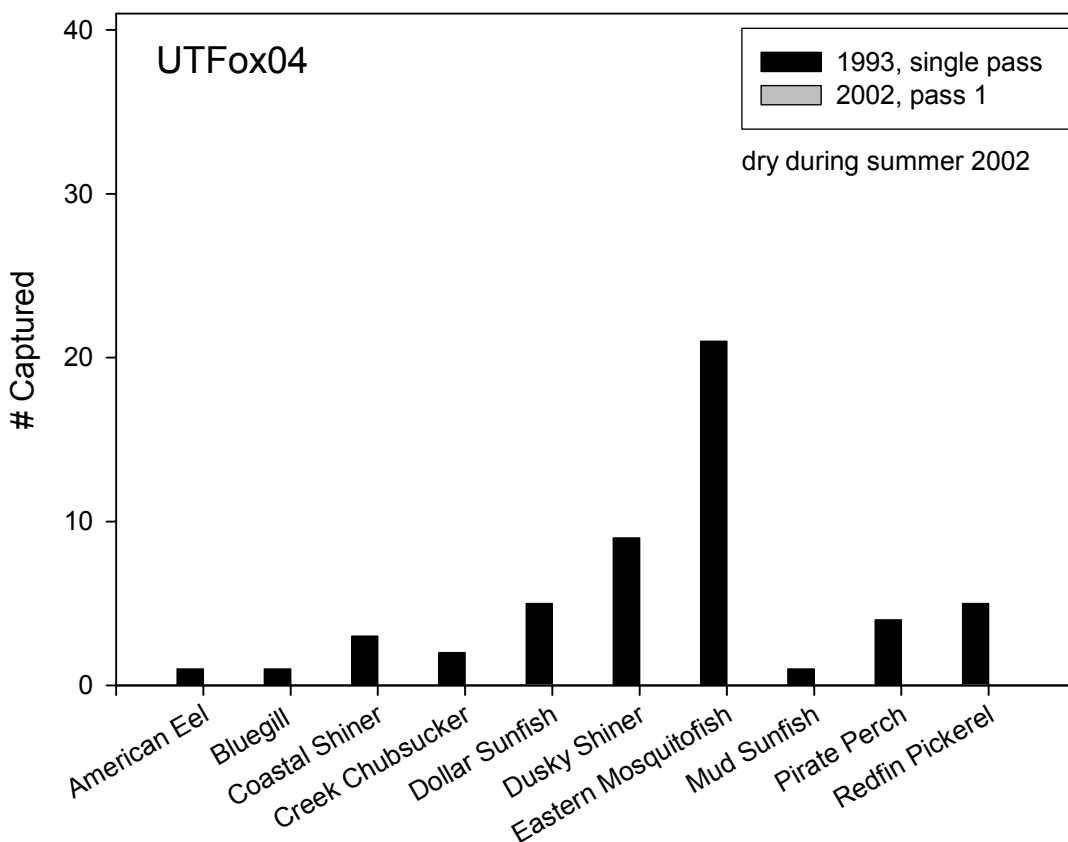
| Stream Site, ID: | Un-named Tributary of Echaw Creek Site 36, UTEch36 |
|------------------------------|---|
| District: | Wambaw |
| USGS Quadrangle: | Honey Hill |
| Survey Date: | 7/12/2002 |
| Downstream Starting Point: | FS road 153 crossing behind gate |
| Total Distance Surveyed (m): | 31 |
| Crew: | Seth Coffman, Jeanne Riley, Margie Brophy, Dan Bell |
| GPS: | UTEch01: N: 3677557.83 meters E: 631246.48 meters 37.99 ft |
| Remarks: | Stream dry except small wetted sections, probably rainwater, only electroshocked pool around culvert at road crossing FS 153. |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 30.7 | 1.5 | 40 | 15 | - | 1 | 3 | n | 4 | 0 | 0 | 0 |

| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|----|----------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 1.7 | 2.4 | 20.8 | 35 | 0 | - | - | - |



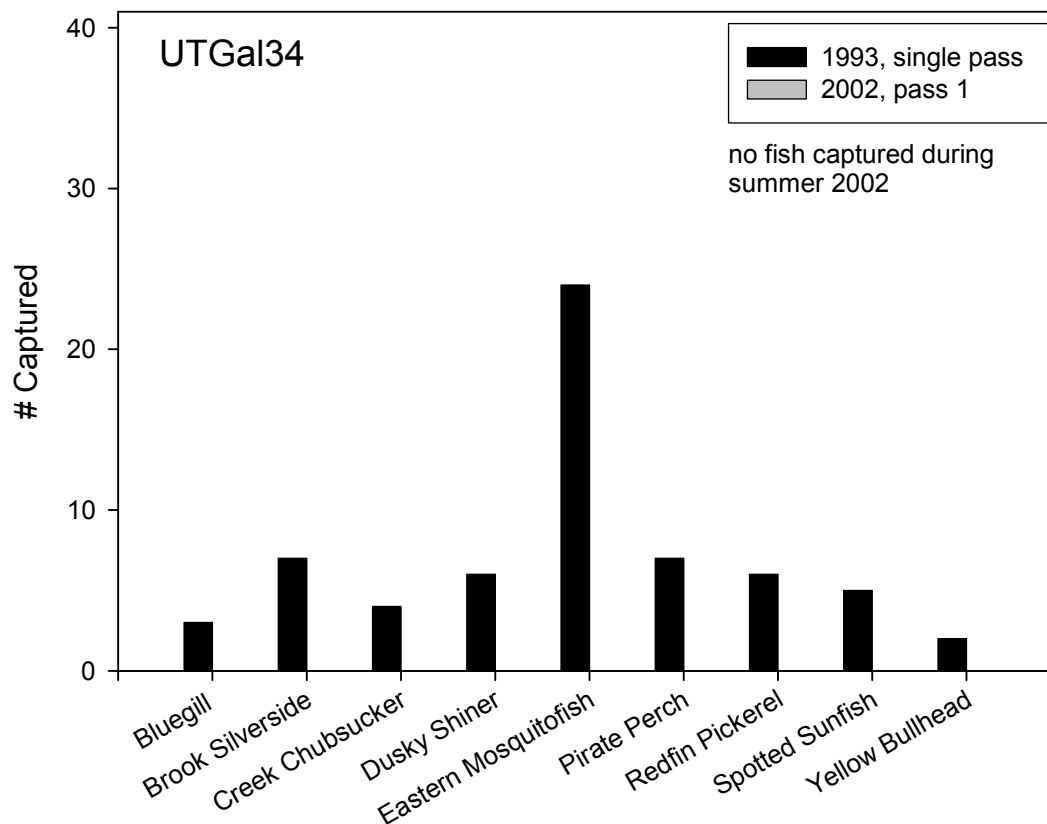
| Stream Site, ID: | Un-named Tributary of Fox Gully Branch Site 04, UTFox04 |
|------------------------------|---|
| District: | Witherbee |
| USGS Quadrangle: | Bethera |
| Survey Date: | 7/10/2002 |
| Downstream Starting Point: | FS road 159 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Margie Brophy, Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry; Unable to electroshock or collect habitat data. |



| Stream Site, ID: | | Un-named Tributary of Gal Branch Site 34, UTGal34 |
|------------------------------|---|---|
| District: | Wambaw | |
| USGS Quadrangle: | Cedar Creek | |
| Survey Date: | 7/12/2002 | |
| Downstream Starting Point: | 113 meters downstream from crossing with FS 151. | |
| Total Distance Surveyed (m): | 100 | |
| Crew: | Margie Brophy, Daniel Bell, Seth Coffman, Jeanne Riley, Christine Black | |
| GPS: | galbr01: N: 3680896.19 meters E: 630812.54 meters 0.28 ft (GPS reading taken 8 m upstream from end of site) | |
| Remarks: | No fish: no block nets used: Rain water from night before in channel: Vegetation growing in the streambed. | |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| G | 1 | 9.4 | 4 | 15 | 10 | - | 3 | 1 | n | 2 | 0 | 1 | 0 |
| P | 2 | 35.4 | 2 | 20 | 10 | - | 3 | 1 | n | 2 | 0 | 1 | 0 |
| P | 3 | 105.2 | 2 | 40 | 25 | - | 3 | 1 | n | 6 | 0 | 4 | 0 |

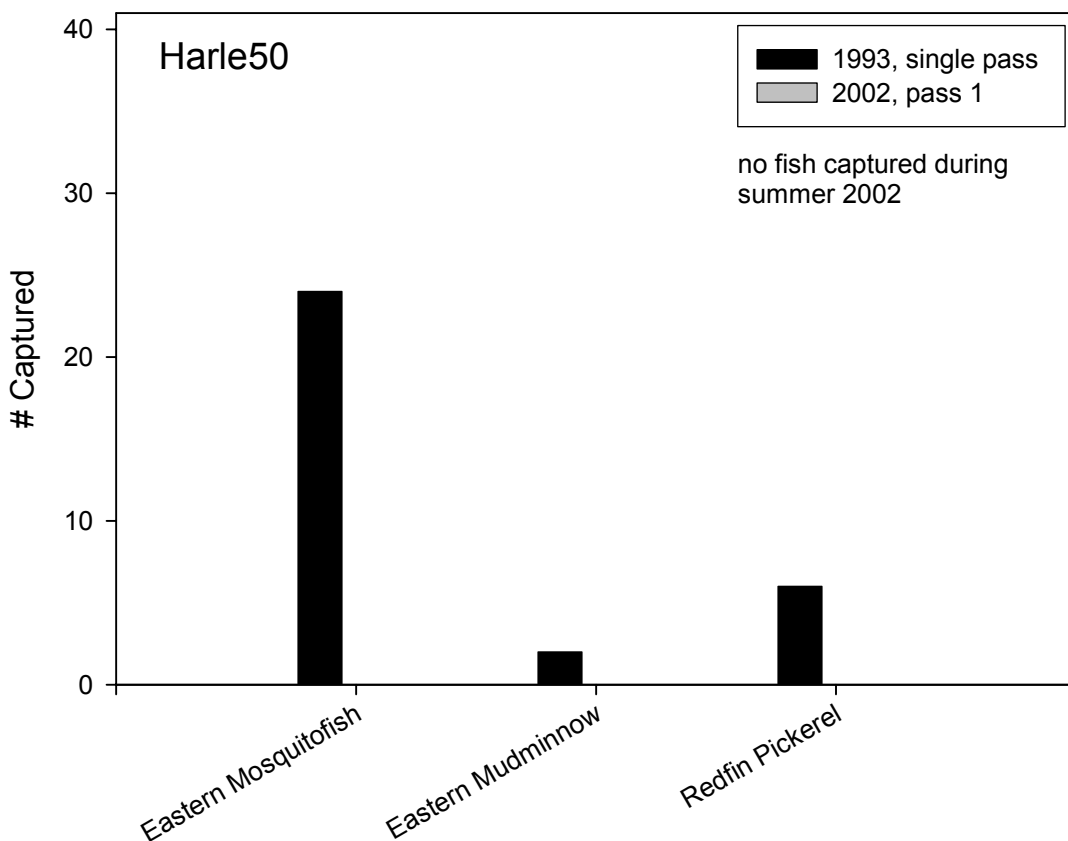
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|---|
| | | Wetted | Channel | Left | Right | | | | |
| G | 1 | - | - | - | - | - | 23 | 7.9 | Under cut banks, exposed roots |
| P | 2 | 2.7 | 2.8 | 30+ | 30+ | - | - | - | exposed roots, riparian extends over swamp area |
| P | 3 | 1.7 | 2 | 30+ | 30+ | 0 | - | - | undercut banks with exposed roots |



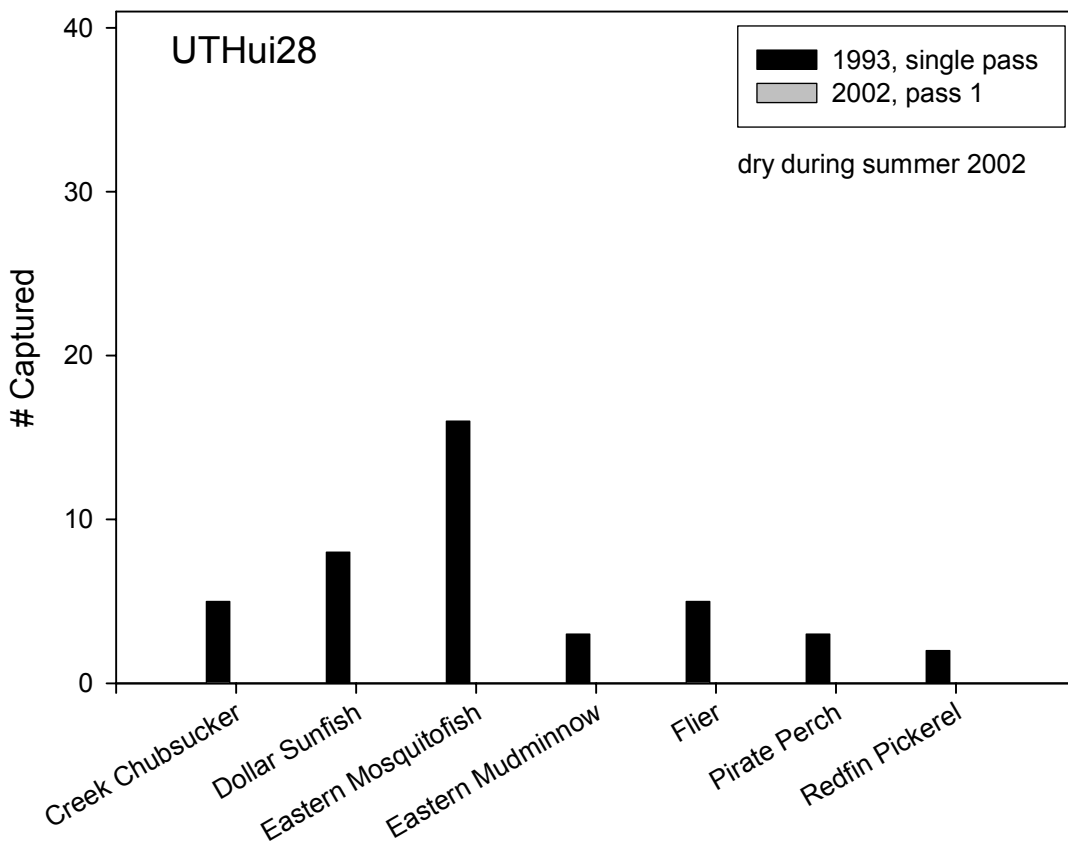
| | |
|------------------------------|---|
| Stream Site, ID: | Harleston Dam Creek Site 50, Harle50 |
| District: | Francis Marion NF |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 6/30/2002 |
| Downstream Starting Point: | Starts 88 meters downstream from state road 133. |
| Total Distance Surveyed (m): | 85 |
| Crew: | Margie Brophy, Daniel Bell, Seth Coffman, Christine Black |
| GPS: | None |
| Remarks: | Vegetation growing on bottom of streambed. |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 85 | 2.5 | 60 | 40 | - | 1 | 3 | n | 4 | 0 | 0 | 0 |

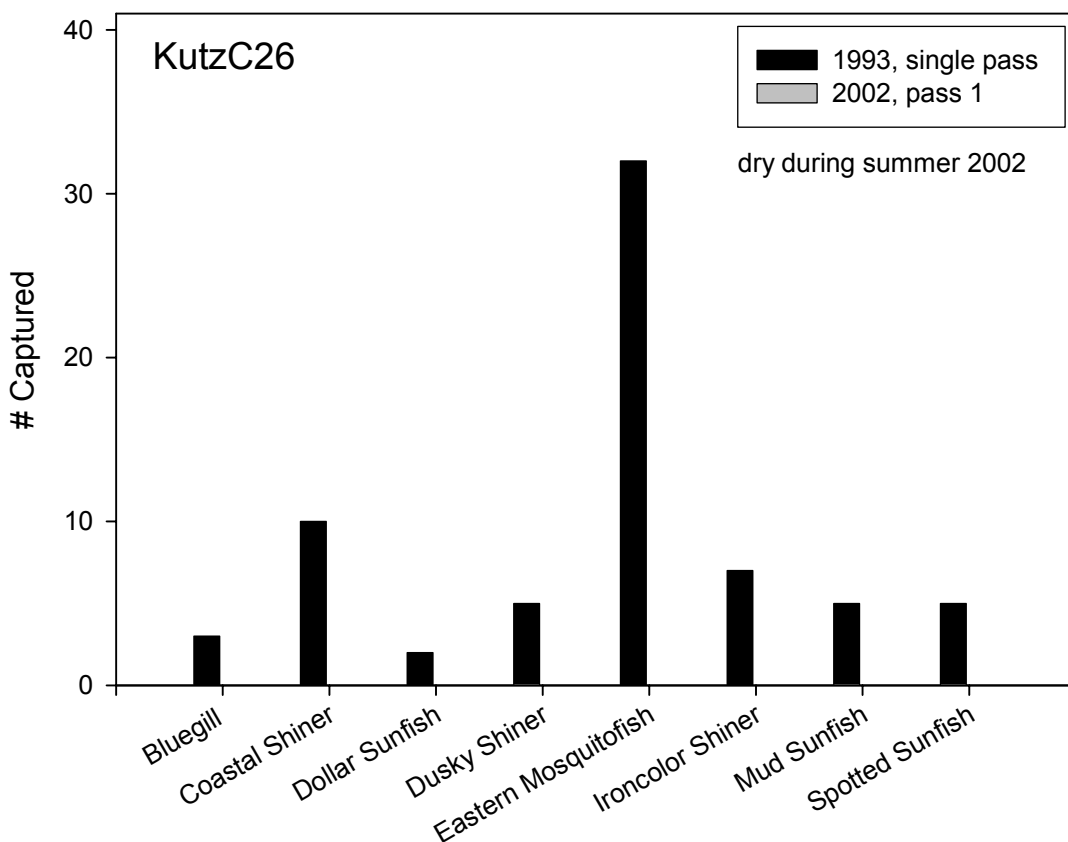
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|----|--|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 2 | 2.3 | 12 | 18 | - | 25 | 8 | Vegetation on bottom |
| - | - | 3.3 | 3.7 | 16 | 14 | - | - | - | All one pool, took measurements at 25 & 75 meters. |



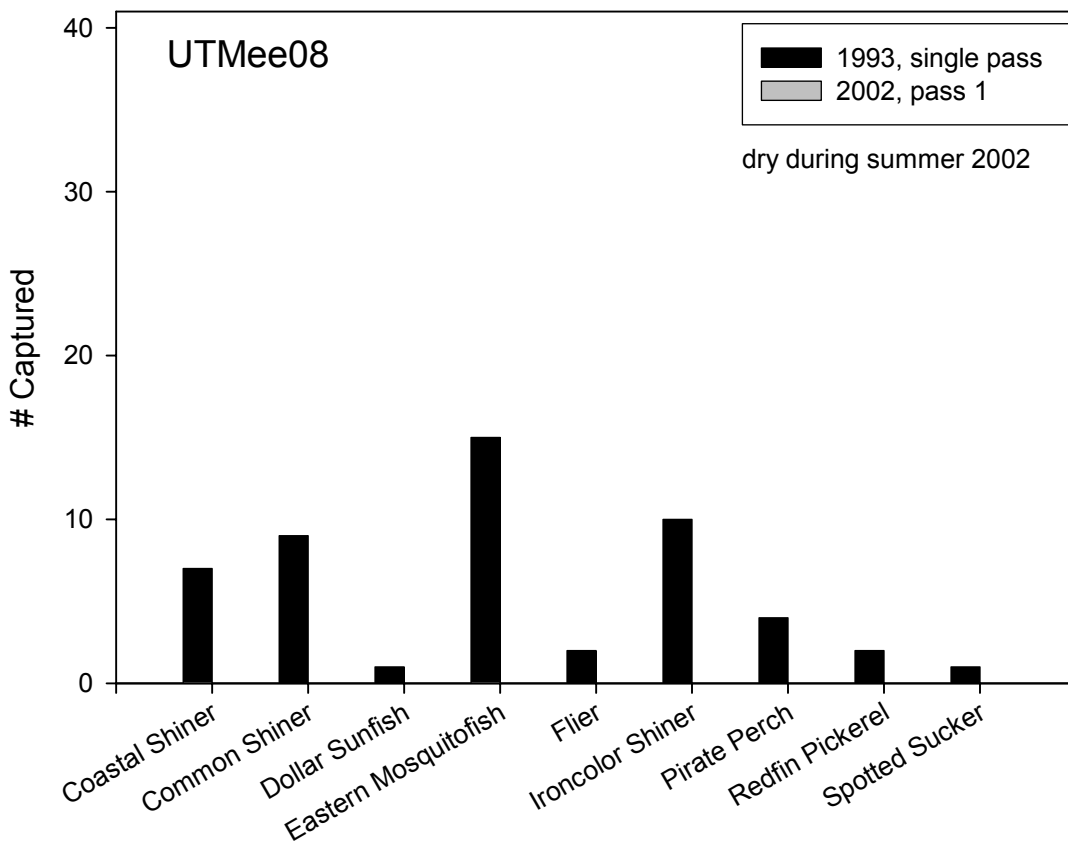
| Stream Site, ID: | Un-named Tributary of Huitt Branch Site 28, UTHui28 |
|------------------------------|--|
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 7/14/2002 |
| Downstream Starting Point: | Near FS/private property boundary on FS road 174 at culvert |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Christine Black, Margie Brophy, Seth Coffman |
| GPS: | hiutt01 N:3664792.49m E:617954.43m 31.40ft |
| Remarks: | Stream dry except for 2 muddy rain puddles at culvert, which were not electroshocked and no habitat data was recorded. |



| | |
|------------------------------|---|
| Stream Site, ID: | Kutz Creek Site 26, KutzC26 |
| District: | Witherbee |
| USGS Quadrangle: | Shulerville |
| Survey Date: | 7/10/2002 |
| Downstream Starting Point: | FS road 167 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell Margie Brophy Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry; Unable to electroshock or collect habitat data. |



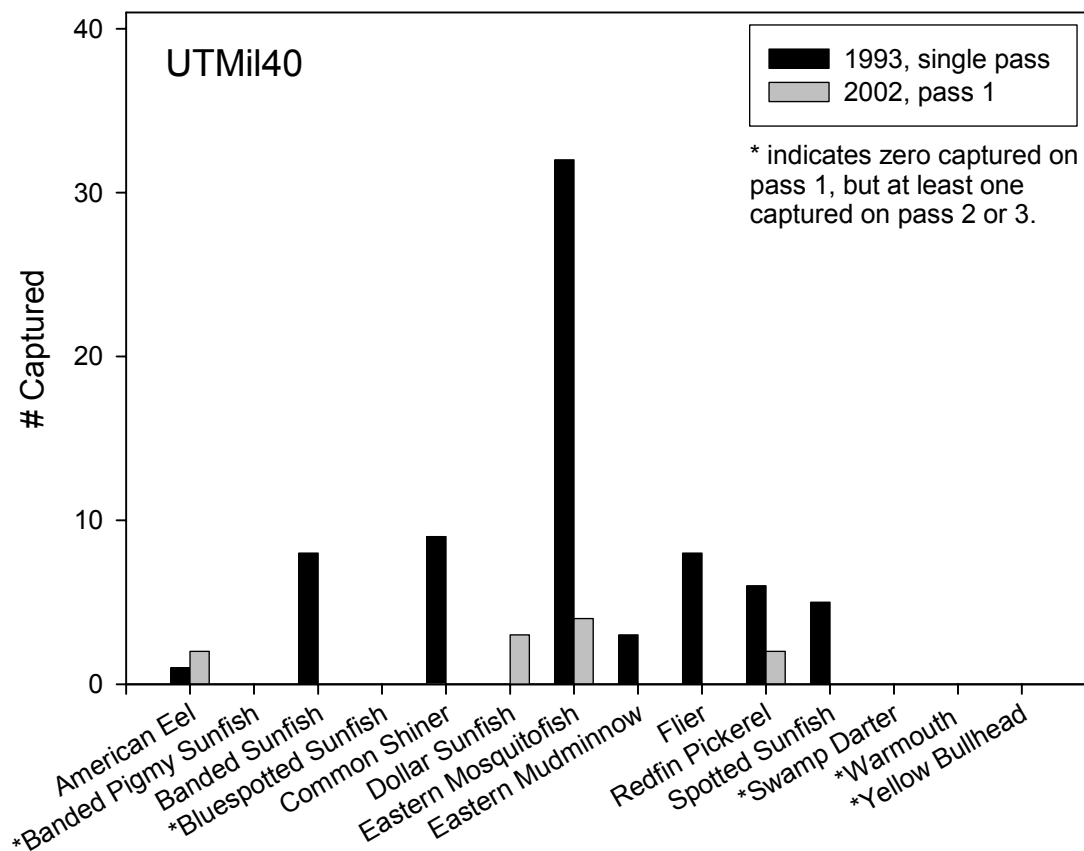
| Stream Site, ID: | Un-named Tributary of Meeting House Branch Site 08, UTMee08 |
|------------------------------|---|
| District: | Wetherbee |
| USGS Quadrangle: | Alvin |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | at culvert of FS road 110-2 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Christine Black, Margie Brophy, Seth Coffman |
| GPS: | utmeet01;N:3686559.32 m E:609265.23 m 50.05ft |
| Remarks: | Stream dry except for muddy pool (possible runoff or rain) on both sides of culvert, which were not shocked; visibility none; no habitat data was recorded. |



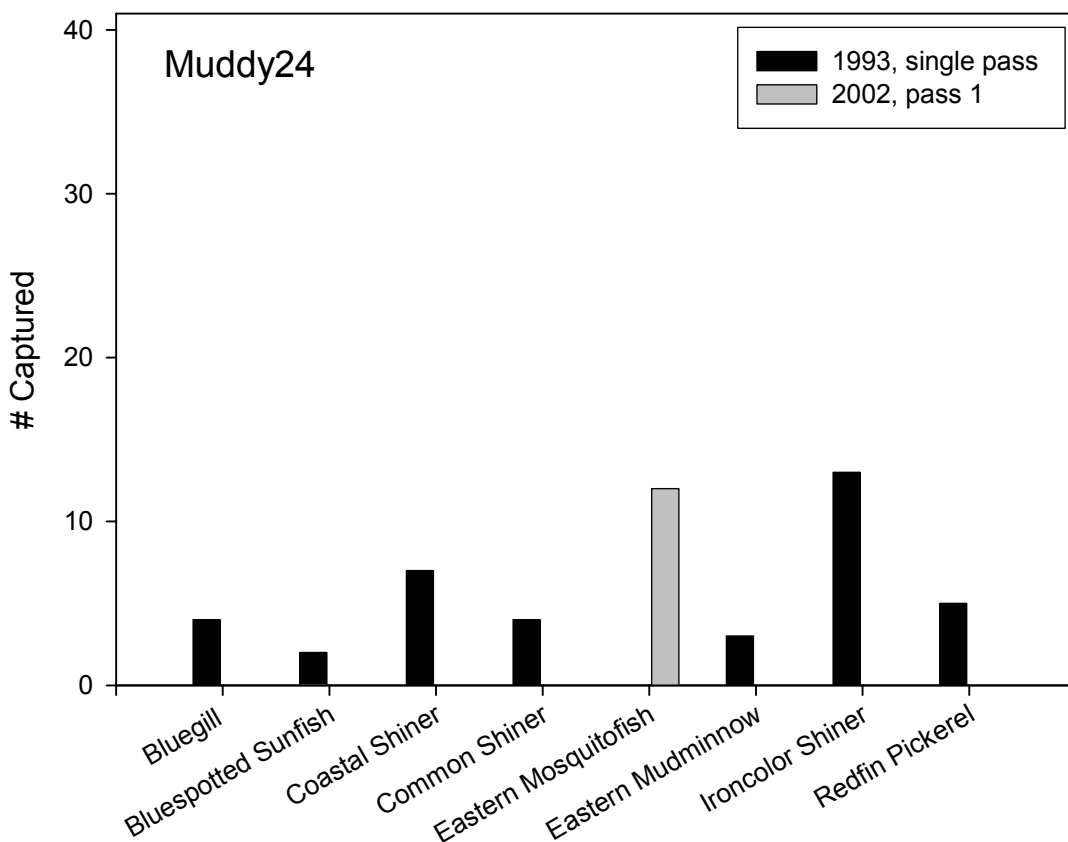
| Stream Site, ID: | | Un-named Tributary of Mill Branch Site 40, UTMil40 | |
|------------------------------|--|---|--|
| District: | | Wambaw | |
| USGS Quadrangle: | | Honey Hill | |
| Survey Date: | | 6/28/2002 | |
| Downstream Starting Point: | | Start 104 meters below fork in stream, upstream from end of logging road. | |
| Total Distance Surveyed (m): | | 99 | |
| Crew: | | Christine Black, Seth Coffman, Margie Brophy, Daniel Bell, Jeanne Riley, Tammy Thatcher | |
| GPS: | | None | |
| Remarks: | | Vegetation growing on stream bed; Block Nets used; In Pass 1, Unidentified Darter {half eaten} possible Sawcheek or Swamp Darter {was discovered when Pickerel threw it up} | |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 99 | 2.5 | 45 | 20 | - | 2 | 1 | n | 11 | 0 | 1 | 0 |

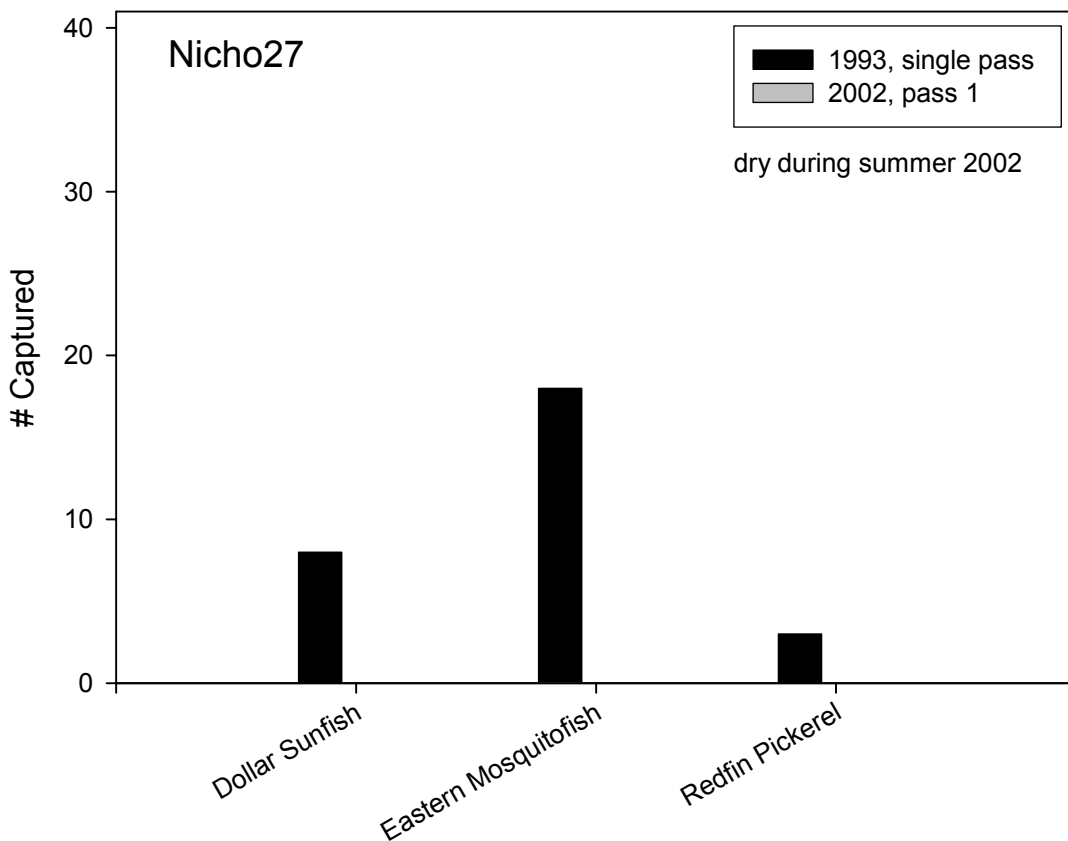
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|--|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 2.5 | 2.8 | 33 | 25 | - | 28 | 7.1 | root wad, exposed roots |
| - | - | 2.6 | 3.1 | 35 | 45 | - | - | - | All one pool, took measurements at 25 & 75 meters. |



| | |
|------------------------------|--|
| Stream Site, ID: | Muddy Creek Site 24, Muddy24 |
| District: | Witherbee |
| USGS Quadrangle: | Huger |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | 20 meters downstream from state road 599 crossing |
| Total Distance Surveyed (m): | 20 |
| Crew: | Margie Brophy, Seth Coffman, Daniel Bell, Christine Black |
| GPS: | Muddy01: N: 3664222.75 m E: 615248.02 m 21.29 ft |
| Remarks: | Clay bottom; four pools; visibility reduced; no habitat data recorded. |



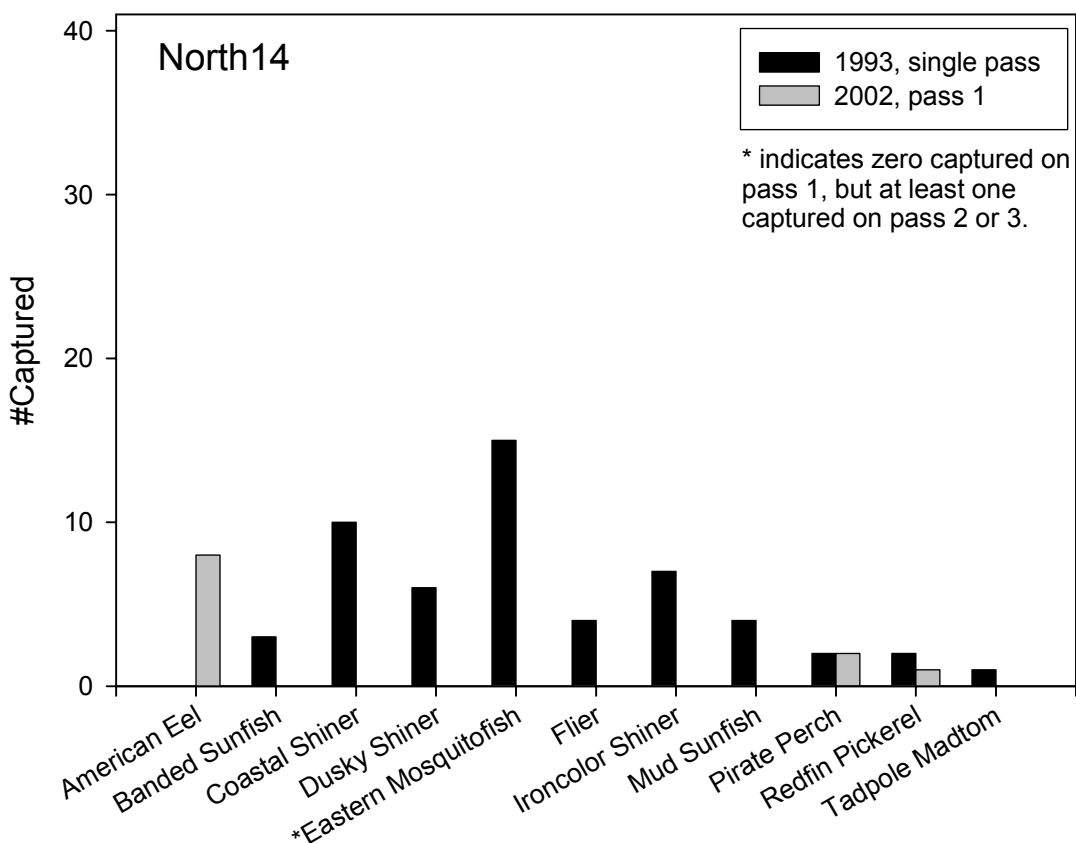
| Stream Site, ID: | Nicholson Creek Site 27, Nicho27 |
|------------------------------|---|
| District: | Witherbee |
| USGS Quadrangle: | Bethera |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | FS road 159 bridge between horse trail crossing road and FS road 168 junction |
| Total Distance Surveyed (m): | 0 |
| Crew: | Seth Coffman, Christine Black, Daniel Bell, Margie Brophy |
| GPS: | nicke01:N:3669913.62 m E:616176.70 m 43.61 ft |
| Remarks: | Stream dry except for pool around FS 159 bridge. Unable to electroshock pool or collect habitat data due to a cottonmouth. |



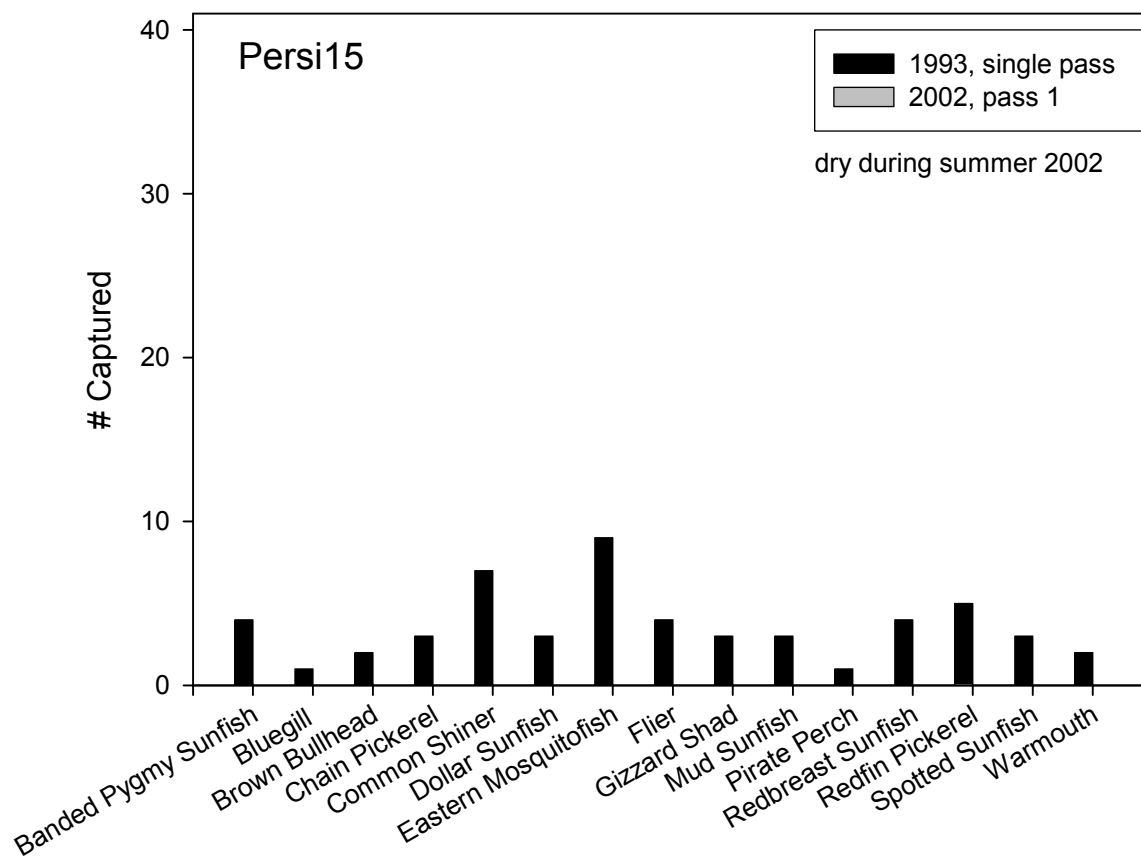
| | |
|------------------------------|--|
| Stream Site, ID: | Northampton Creek Site 14, North14 |
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 6/30/2002 |
| Downstream Starting Point: | Approximately 20 meters upstream from FS 170 bridge crossing |
| Total Distance Surveyed (m): | 94 |
| Crew: | Seth Coffman, Margie Brophy, Daniel Bell, Christine Black |
| GPS: | None |
| Remarks: | Caught a fresh water shrimp |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 47 | 1.2 | 30 | 15 | - | 3 | 2 | n | 3 | 0 | 0 | 0 |
| P | 2 | 94.3 | 1 | 15 | 5 | - | 2 | 3 | n | 0 | 0 | 0 | 0 |

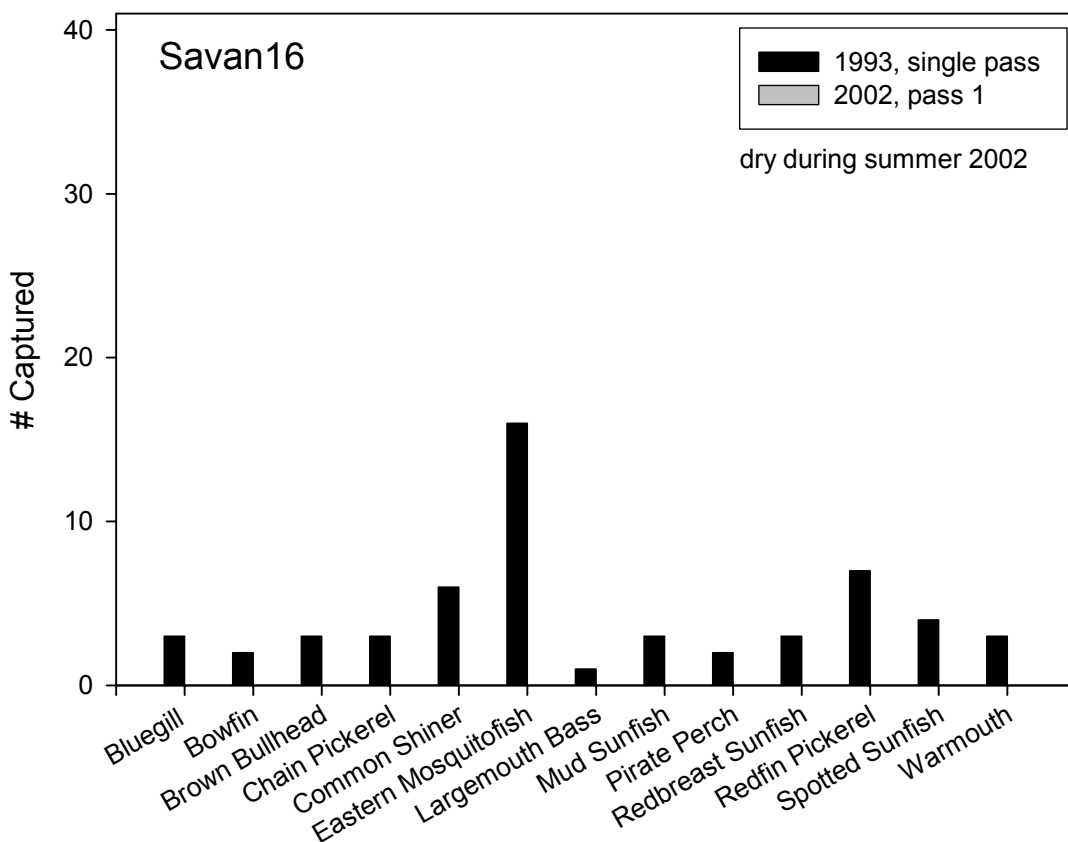
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|-----------------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 1 | 1.6 | 10.5 | 1.1 | - | 24 | 7.6 | Water level low |
| P | 2 | 1.2 | 1.7 | 1.2 | 1 | - | - | - | - |



| Stream Site, ID: | Persimmons Branch Site 15, Persi15 |
|------------------------------|--|
| District: | Witherbee |
| USGS Quadrangle: | Alvin |
| Survey Date: | 7/11/2002 |
| Downstream Starting Point: | FS 119 crossing |
| Total Distance Surveyed (m): | 0 |
| Crew: | Seth Coffman, Daniel Bell, Margie Brophy, Jeanne Riley |
| GPS: | not recorded |
| Remarks: | Streambed dry; Unable to electroshock or collect habitat data. |



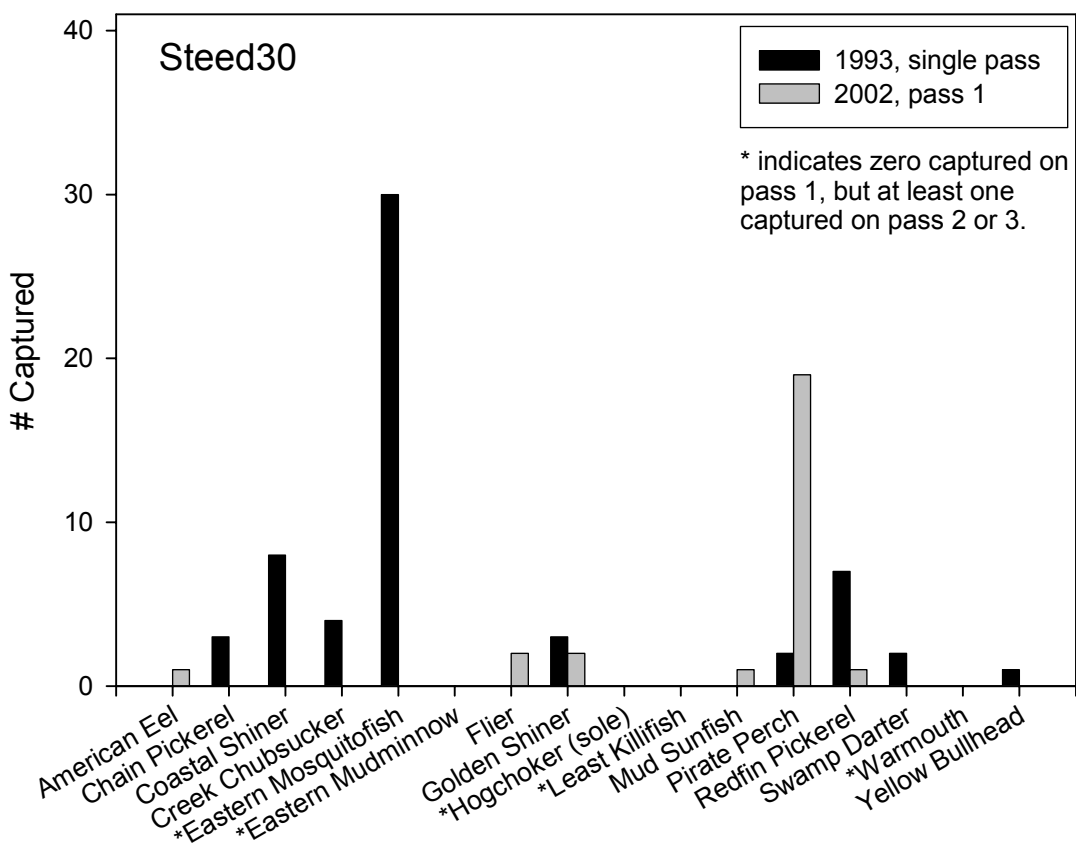
| | |
|------------------------------|--|
| Stream Site, ID: | Savanna Creek Site 16, Savan16 |
| District: | Witherbee |
| USGS Quadrangle: | Alvin |
| Survey Date: | 7/11/2002 |
| Downstream Starting Point: | FS 119 crossing |
| Total Distance Surveyed (m): | 0 |
| Crew: | Seth Coffman, Daniel Bell, Margie Brophy, Jeanne Riley |
| GPS: | nor recorded |
| Remarks: | Streambed dry; Unable to electroshock or collect habitat data. |



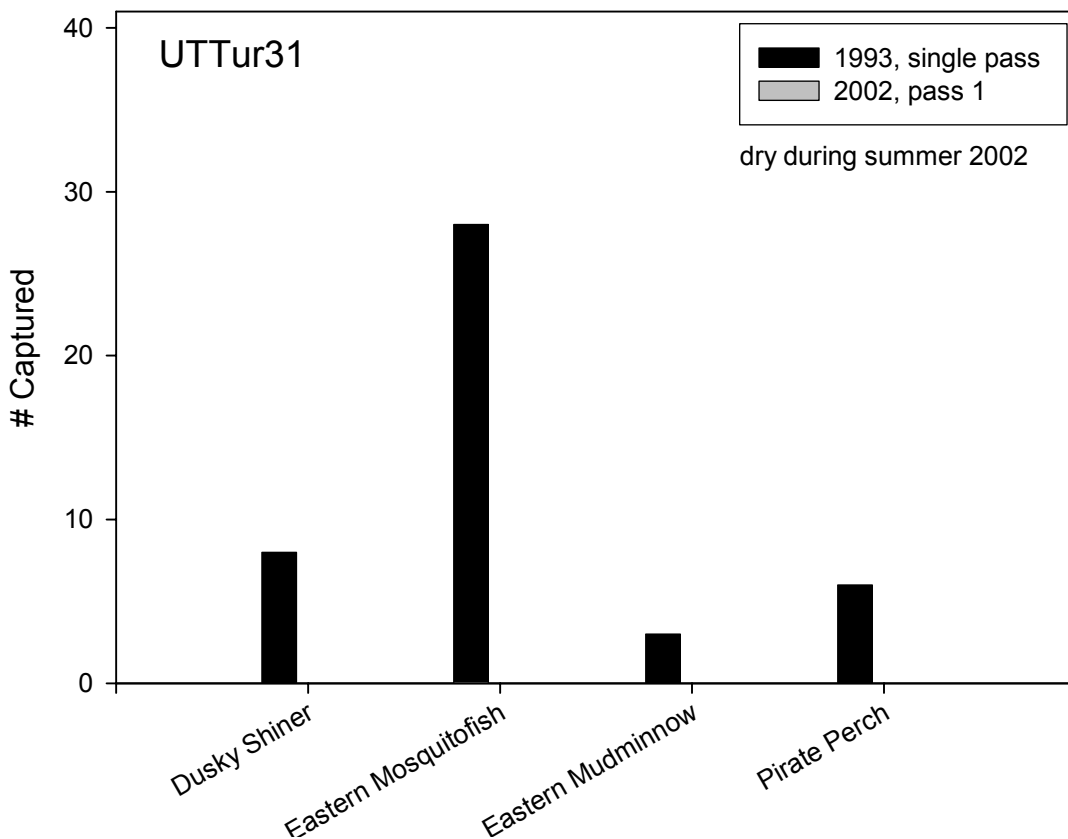
| | |
|------------------------------|---|
| Stream Site, ID: | Steed Creek Site 30, Steed30 |
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 6/29/2002 |
| Downstream Starting Point: | Approximately 30 meters upstream from FS 217 bridge on left stream split |
| Total Distance Surveyed (m): | 99 |
| Crew: | Seth Coffman, Margie Brophy, Daniel Bell, Christine Black |
| GPS: | none |
| Remarks: | Water is extra black; visibility no more than 10 inches; Crabs were caught. |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|----|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 60.1 | 5 | 70 | 30 | - | 3 | 1 | n | 18 | 0 | 7 | 0 |
| P | 2 | 99 | 5 | 55 | 30 | - | 2 | 1 | n | 8 | 0 | 11 | 0 |

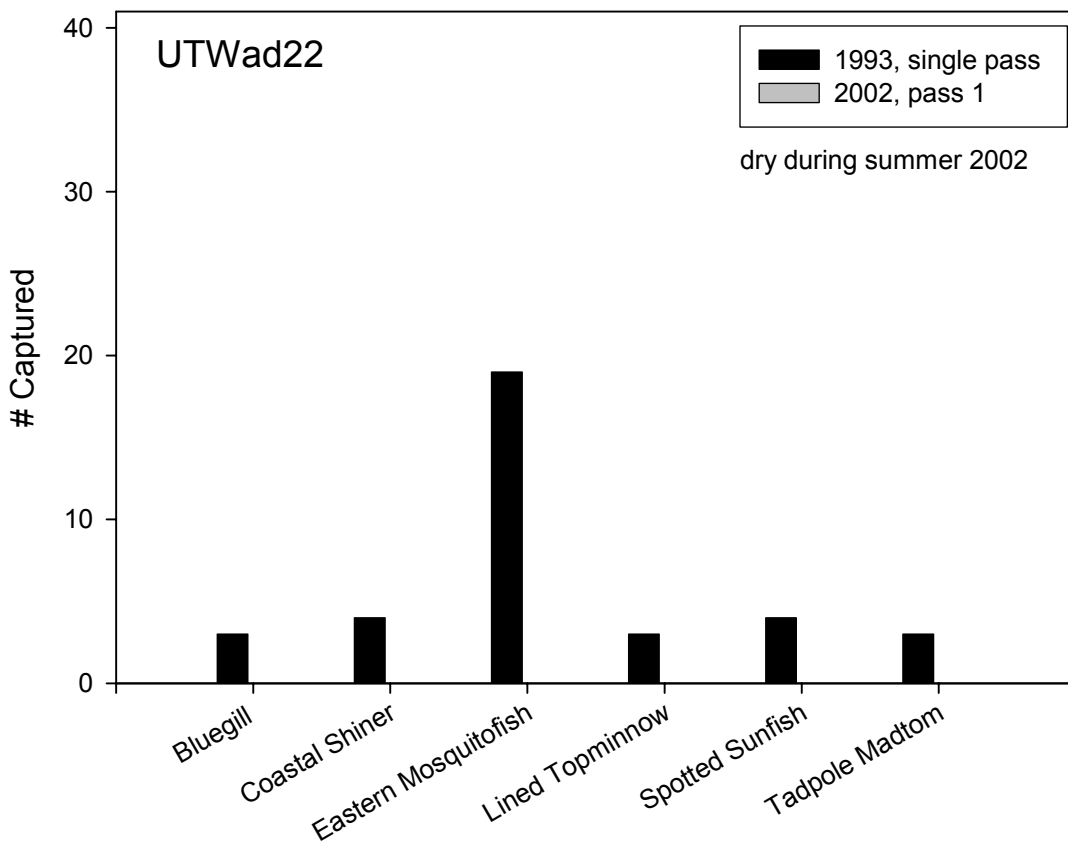
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|--------------------------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 3.2 | 4.7 | 5.5 | 7.5 | - | 26 | 7.8 | root wads, exposed roots |
| P | 2 | 3.3 | 3.9 | 0.5 | 0.4 | - | - | - | root wad |



| Stream Site, ID: | Un-named Tributary of Turkey Creek Site 31, UTTur31 |
|------------------------------|--|
| District: | Wambaw |
| USGS Quadrangle: | Shulerville |
| Survey Date: | 7/13/2002 |
| Downstream Starting Point: | FS road 161 bridge crossing between Fs 166 and FS 176-C |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Christine Black, Margie Brophy, Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry except for small pool around bridge; cottonmouth seen in pool; unable to electroshock or collect habitat data. |



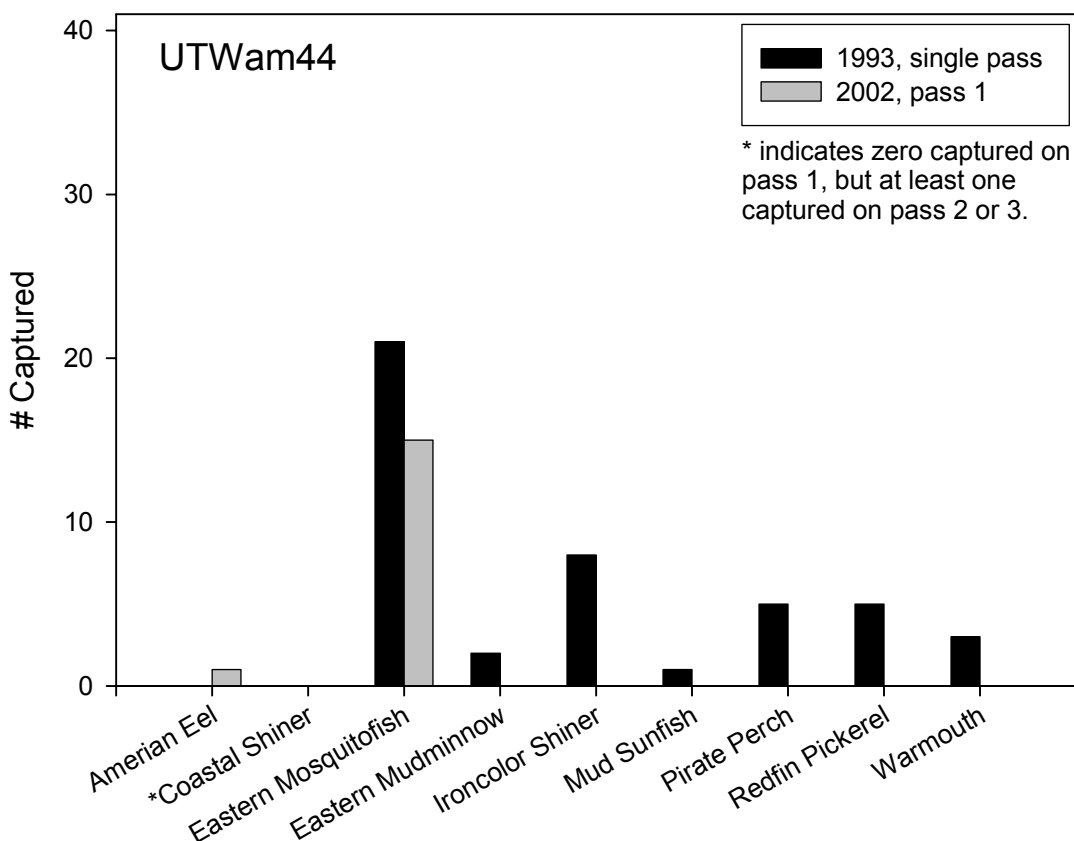
| Stream Site, ID: | Un-named Tributary of Wadboo Swamp Site 22, UTWad22 |
|------------------------------|--|
| District: | Witherbee |
| USGS Quadrangle: | Bonneau |
| Survey Date: | 7/10/2002 |
| Downstream Starting Point: | State highway 40 |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Margie Brophy, Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream dry; mussel shells collected from dry streambed upstream of bridge; no electroshocking completed; no habitat data recorded. |



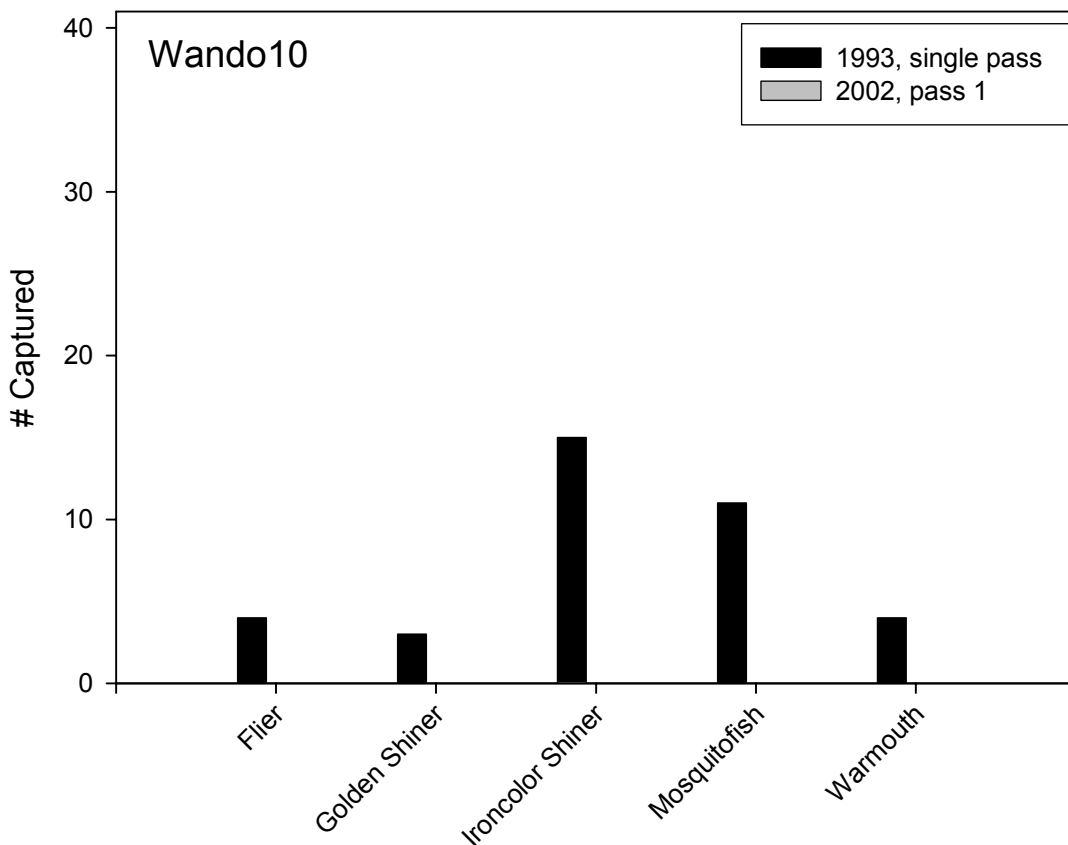
| | |
|------------------------------|--|
| Stream Site, ID: | Un-named Tributary of Wambaw Creek Site 44, UTWam44 |
| District: | Wambaw |
| USGS Quadrangle: | n/a |
| Survey Date: | 6/27/2002 |
| Downstream Starting Point: | 100 meters upstream from FS 211 crossing |
| Total Distance Surveyed (m): | 100 |
| Crew: | Jeanne Riley, Tammy Thatcher, Christine Black, Margie Brophy, Daniel Bell, Seth Coffman |
| GPS: | not recorded |
| Remarks: | Stream was completely dry one week previous receiving 6" of rain since then according to Tammy Thatcher; Vegetation on streambed; American Eel (1st pass) found on the other side of the upstream block net. |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 45.2 | 2 | 45 | 20 | - | 1 | 2 | n | 5 | 0 | 0 | 0 |
| P | 2 | 76.6 | 2 | 35 | 20 | - | 1 | 2 | n | | 0 | 0 | 0 |
| P | 3 | 100 | 1.8 | 35 | 20 | - | 1 | 2 | n | 7 | 0 | 0 | 0 |

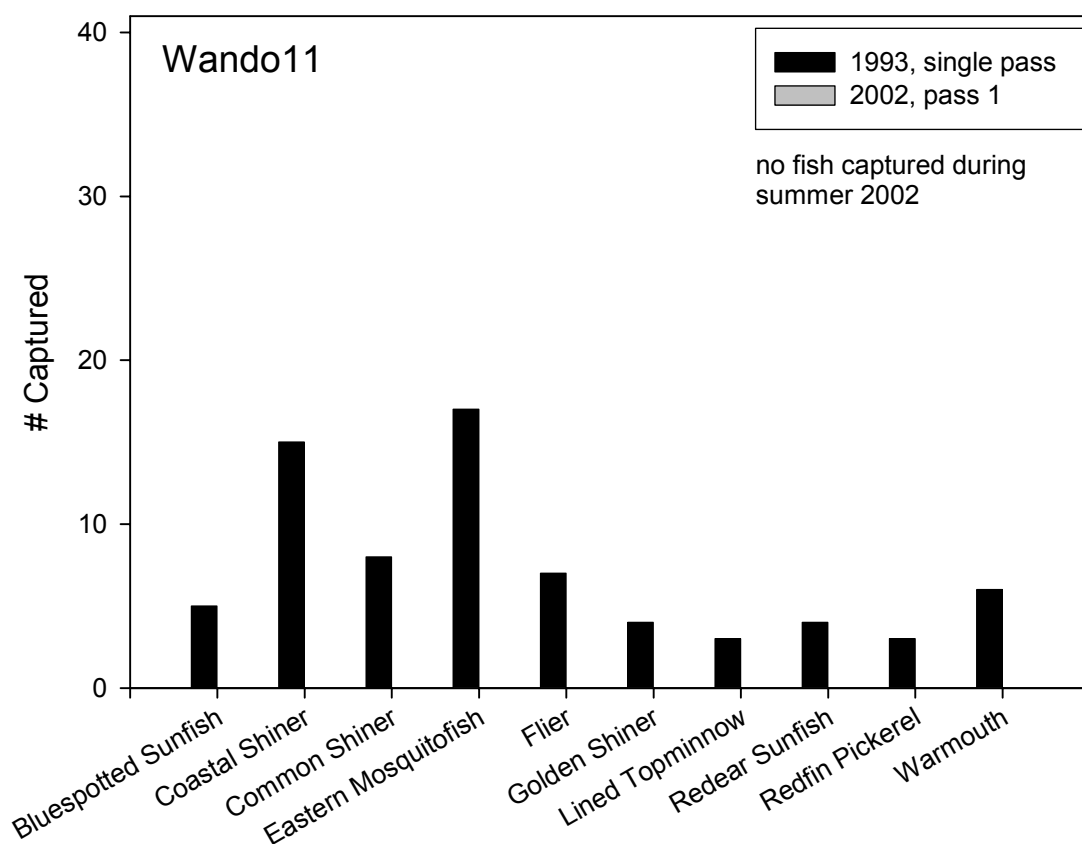
| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|----------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 2 | 2.6 | 32.7 | 20 | - | 26 | 7.4 | - |
| P | 2 | 2.1 | 2.7 | 8 | 22.2 | - | - | - | - |
| P | 3 | - | - | - | - | - | - | - | - |



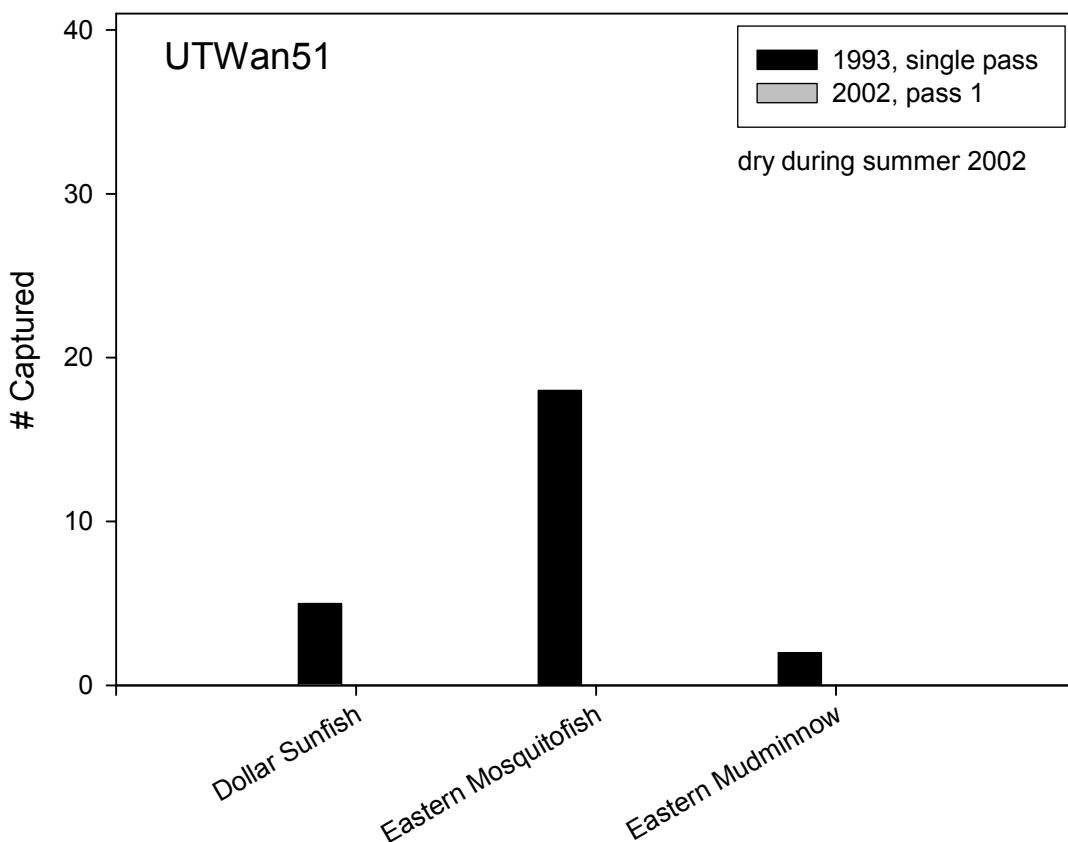
| | |
|------------------------------|--|
| Stream Site, ID: | Wando River Site 10, Wando10 |
| District: | Wambaw |
| USGS Quadrangle: | Sewee Bay |
| Survey Date: | 7/14/2002 |
| Downstream Starting Point: | FS road 228 at bridge crossing near FS road 228-A |
| Total Distance Surveyed (m): | 0 |
| Crew: | Dan Bell, Christine Black, Margie Brophy, Seth Coffman |
| GPS: | wando02 N:3650803.77m E:623841.51m 37.04ft |
| Remarks: | River is a wide swamp spilled over into floodplain no defined channel visible, unable to electroshock or collect habitat data. |



| Stream Site, ID: | Wando River Site 11, Wando11 |
|------------------------------|--|
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 7/14/2002 |
| Downstream Starting Point: | Start 5 m below culvert located off a trail following the stream/ 60 m downstream of FS Road 228 at bridge near FS 5134 |
| Total Distance Surveyed (m): | 40 |
| Crew: | Christine Black, Daniel Bell, Margie Brophy, Seth Coffman |
| GPS: | wando01 N:3652851.06m E:622813.35m 12.15ft |
| Remarks: | Shock site believed to be an extension of Withy Wood Canal shown on Ocean Bay Quad; The water had reduced visibility and the channel was wide at places; no habitat data recorded. |



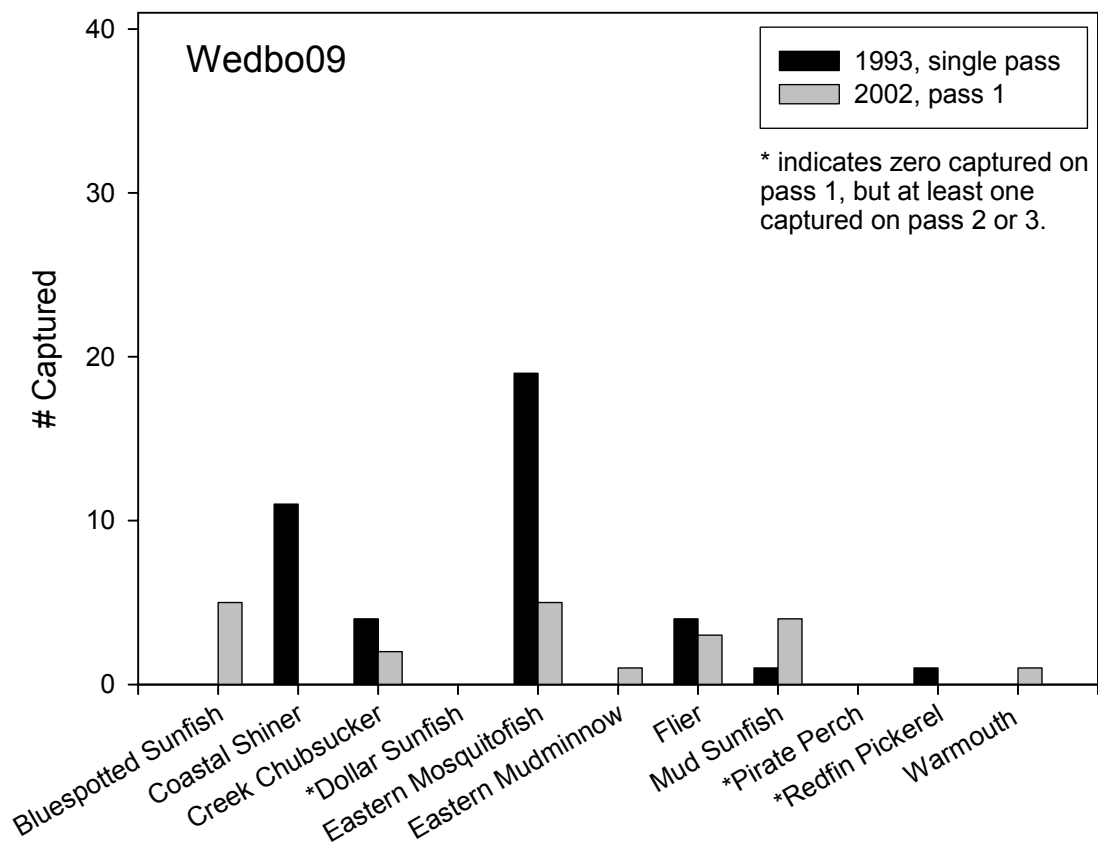
| Stream Site, ID: | Un-named Tributary of Wando Swamp Site 51, UTWan51 |
|------------------------------|---|
| District: | Wambaw |
| USGS Quadrangle: | Ocean Bay |
| Survey Date: | 6/29/2002 |
| Downstream Starting Point: | Off of FS 202A |
| Total Distance Surveyed (m): | 0 |
| Crew: | Christine Black, Seth Coffman, Margie Brophy, Daniel Bell |
| GPS: | none |
| Remarks: | Stream dry; unable to electroshock or collect habitat data. |



| | |
|------------------------------|---|
| Stream Site, ID: | Wedboo Swamp Site 09, Wedbo09 |
| District: | Witherbee |
| USGS Quadrangle: | Alvin |
| Survey Date: | 7/11/2002 |
| Downstream Starting Point: | Approximately 20 meters upstream in channel perpendicular to Hwy17A. |
| Total Distance Surveyed (m): | 90 |
| Crew: | Seth Coffman, Jeanne Riley, Margie Brophy, Dan Bell |
| GPS: | wedbo01 N3683965.38m; E610864.98m; 52.68 ft |
| Remarks: | Looks channelized; swampy; substrate clay and slick, apparent alligator slicks. |

| Unit Type | Unit # | Dist (m) | Width Est(m) | Depth | | | Substrate | | Embed >35% | LWD | | | |
|-----------|--------|----------|--------------|-------|-----|-----|-----------|-----|------------|-----|---|---|---|
| | | | | Max | Avg | RCD | Dom | Sub | | 1 | 2 | 3 | 4 |
| P | 1 | 93 | 3 | 90 | 50 | - | 2 | 1 | n | 4 | 0 | 0 | 0 |

| Unit Type | Unit # | Width (m) | | Riparian | | Gradient (%) | Temp (C) | pH | Comments |
|-----------|--------|-----------|---------|----------|-------|--------------|----------|-----|-------------------|
| | | Wetted | Channel | Left | Right | | | | |
| P | 1 | 2.3 | 2.5 | - | - | - | 26 | 5.8 | riparian is swamp |



Appendix B: Electrofishing Results

Electrofishing results from the Francis Marion National Forest for 1993 (Hansbarger and Dean 1994) and 2002. The 1993 surveys covered 100-yard reaches using single-pass electrofishing. The 2002 surveys covered 100 m reaches using 3-pass depletion electrofishing. The 2002 population estimates were calculated using formulas found in Kwak (1991). Minimum and maximum lengths are for the smallest and largest individuals captured in each pass. Weight is the total (batch) weight of all individuals captured in each pass.

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | |
|----------------------|------------------------|--------|--------|--------|-----------|-------------|--------|--------|--------|-------------|---------------------|--------|--------|-------------|--------|--------|---------------------|-------------|--------|--------|--------|-------------|------------|--------|--------|-------------|--------|--------|--------|
| | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 2002 | | |
| | Single Pass | Pass 1 | Pass 2 | Pass 3 | Pop. Est. | Single Pass | Pass 1 | Pass 2 | Pass 3 | Single Pass | Pass 1 | Pass 2 | Pass 3 | Single Pass | Pass 1 | Pass 2 | Pass 3 | Single Pass | Pass 1 | Pass 2 | Pass 3 | Single Pass | Pass 1 | Pass 2 | Pass 3 | Single Pass | Pass 1 | Pass 2 | Pass 3 |
| Allig49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal Shiner | 9 | -- | -- | -- | dry | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 18 | -- | -- | -- | dry | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 6 | -- | -- | -- | dry | 75 | 75 | -- | -- | -- | 190 | -- | -- | -- | -- | -- | -- | 190 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Warmouth | 7 | -- | -- | -- | dry | 70 | 70 | -- | -- | -- | 78 | -- | -- | -- | -- | -- | -- | 78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Beauf21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Banded Pygmy Sunfish | 0 | 2 | 0 | 0 | 2 | -- | -- | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 22 | -- | -- | -- | -- | -- | -- | 1 | -- | -- | -- |
| Banded Sunfish | 2 | 0 | 0 | 0 | 0 | 50 | 50 | -- | -- | -- | 56 | -- | -- | -- | -- | -- | -- | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bluegill | 6 | 1 | 0 | 0 | 1 | 79 | 79 | 99 | -- | -- | 180 | -- | -- | -- | -- | -- | -- | 180 | 99 | -- | -- | -- | -- | -- | 13 | -- | -- | -- | -- |
| Bluespotted Sunfish | 3 | 2 | 0 | 0 | 2 | 45 | 45 | 51 | -- | -- | 50 | -- | -- | -- | -- | -- | -- | 50 | 66 | -- | -- | -- | -- | -- | 7 | -- | -- | -- | -- |
| Coastal Shiner | 8 | 0 | 0 | 0 | 0 | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 0 | 26 | 0 | 0 | 26 | -- | -- | 11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56 | -- | -- | -- | -- | -- | 13 | -- | -- | -- | -- |
| Flier | 4 | 0 | 0 | 0 | 0 | 64 | 64 | -- | -- | -- | 68 | -- | -- | -- | -- | -- | -- | 68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Golden Shiner | 0 | 1 | 0 | 0 | 1 | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | 9 | -- | -- | -- | -- |
| Ironcolor Shiner | 5 | 0 | 0 | 0 | 0 | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Largemouth Bass | 1 | 0 | 0 | 0 | 0 | 155 | 155 | -- | -- | -- | 155 | -- | -- | -- | -- | -- | -- | 155 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Least Killifish | 0 | 2 | 0 | 0 | 2 | -- | -- | 28 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 30 | -- | -- | -- | -- | -- | 1 | -- | -- | -- | -- |
| Pirate Perch | 0 | 1 | 0 | 0 | 1 | -- | -- | 66 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 66 | -- | -- | -- | -- | -- | 4 | -- | -- | -- | -- |
| Spotted Sunfish | 6 | 0 | 0 | 0 | 0 | 70 | 70 | -- | -- | -- | 90 | -- | -- | -- | -- | -- | -- | 90 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Warmouth | 0 | 1 | 0 | 0 | 1 | -- | -- | 133 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 133 | -- | -- | -- | -- | -- | 44 | -- | -- | -- | -- |
| UTBe152 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eastern Mosquitofish | 27 | -- | -- | -- | dry | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 6 | -- | -- | -- | dry | 53 | 53 | -- | -- | -- | 189 | -- | -- | -- | -- | -- | -- | 189 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bullh02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Banded Pygmy Sunfish | 4 | -- | -- | -- | dry | 28 | 28 | -- | -- | -- | 33 | -- | -- | -- | -- | -- | -- | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Brown Bullhead | 1 | -- | -- | -- | dry | 185 | 185 | -- | -- | -- | 185 | -- | -- | -- | -- | -- | -- | 185 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Coastal Shiner | 10 | -- | -- | -- | dry | na | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Creek Chubsucker | 1 | -- | -- | -- | dry | 130 | 130 | -- | -- | -- | 130 | -- | -- | -- | -- | -- | -- | 130 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | | | | | | | | | |
|-----------------------------|------------------------|------|------|------|------|------|------|------|------|--|---------------------|------|------|------|------|------|---------------------|--|------|--------|------|----|------------|----|------|----|------|--|--------|------|----|------|----|------|----|--|--|
| | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 2002 | | | | | | | | |
| | Single | Pass | 1 | Pass | 2 | Pass | 3 | Pop. | Est. | | Single | Pass | 1 | Pass | 2 | Pass | 3 | | | Single | Pass | 1 | Pass | 2 | Pass | 3 | | | Single | Pass | 1 | Pass | 2 | Pass | 3 | | |
| Bullh02 continued... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eastern Mosquitofish | 40 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Flier | 1 | -- | -- | -- | -- | -- | -- | dry | | | 90 | -- | -- | -- | -- | -- | -- | | | 90 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Golden Shiner | 3 | -- | -- | -- | -- | -- | -- | dry | | | 150 | -- | -- | -- | -- | -- | -- | | | 166 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Largemouth Bass | 1 | -- | -- | -- | -- | -- | -- | dry | | | 102 | -- | -- | -- | -- | -- | -- | | | 102 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Mud Sunfish | 1 | -- | -- | -- | -- | -- | -- | dry | | | 147 | -- | -- | -- | -- | -- | -- | | | 147 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Pirate Perch | 1 | -- | -- | -- | -- | -- | -- | dry | | | 78 | -- | -- | -- | -- | -- | -- | | | 78 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Redbreast Sunfish | 2 | -- | -- | -- | -- | -- | -- | dry | | | 153 | -- | -- | -- | -- | -- | -- | | | 178 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Redfin Pickerel | 2 | -- | -- | -- | -- | -- | -- | dry | | | 180 | -- | -- | -- | -- | -- | -- | | | 52 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Spotted Sunfish | 4 | -- | -- | -- | -- | -- | -- | dry | | | 77 | -- | -- | -- | -- | -- | -- | | | 147 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Swamp Darter | 3 | -- | -- | -- | -- | -- | -- | dry | | | 40 | -- | -- | -- | -- | -- | -- | | | 45 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| CaneG01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal Shiner | 7 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Eastern Mosquitofish | 29 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Largemouth Bass | 1 | -- | -- | -- | -- | -- | -- | dry | | | 102 | -- | -- | -- | -- | -- | -- | | | 102 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Mud Sunfish | 2 | -- | -- | -- | -- | -- | -- | dry | | | 102 | -- | -- | -- | -- | -- | -- | | | 102 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Pirate Perch | 6 | -- | -- | -- | -- | -- | -- | dry | | | 64 | -- | -- | -- | -- | -- | -- | | | 114 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Spotted Sunfish | 6 | -- | -- | -- | -- | -- | -- | dry | | | 64 | -- | -- | -- | -- | -- | -- | | | 101 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Yellow Bullhead | 1 | -- | -- | -- | -- | -- | -- | dry | | | 153 | -- | -- | -- | -- | -- | -- | | | 153 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| CaneG17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal Shiner | 9 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Eastern Mudminnow | 3 | -- | -- | -- | -- | -- | -- | dry | | | 70 | -- | -- | -- | -- | -- | -- | | | 75 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Ironcolor Shiner | 6 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Mud Sunfish | 2 | -- | -- | -- | -- | -- | -- | dry | | | 75 | -- | -- | -- | -- | -- | -- | | | 89 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Pirate Perch | 4 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Redfin Pickerel | 5 | -- | -- | -- | -- | -- | -- | dry | | | 97 | -- | -- | -- | -- | -- | -- | | | 150 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Spotted Sunfish | 5 | -- | -- | -- | -- | -- | -- | dry | | | 78 | -- | -- | -- | -- | -- | -- | | | 130 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| UTC48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eastern Mosquitofish | 15 | -- | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | -- | | | na | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |
| Redfin Pickerel | 5 | -- | -- | -- | -- | -- | -- | dry | | | 64 | -- | -- | -- | -- | -- | -- | | | 100 | -- | -- | -- | -- | -- | -- | | | -- | -- | -- | -- | -- | -- | -- | | |

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | |
|----------------------|------------------------|------|------|----|------|-----|-----------|------|------|------|---------------------|------|------|----|------|----|---------------------|------|------|---|------|---|-------------|------|------|---|------|---|--|
| | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | |
| | Single Pass | Pass | 1 | 2 | Pass | 3 | Pop. Est. | 2002 | 2002 | 2002 | Single Pass | Pass | 1 | 2 | Pass | 3 | Single Pass | Pass | 1 | 2 | Pass | 3 | Single Pass | Pass | 1 | 2 | Pass | 3 | |
| Coote12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Eel | 0 | 11 | 4 | 3 | 20 | 115 | 140 | 136 | -- | -- | 277 | 185 | 179 | 94 | 23 | 17 | | | | | | | | | | | | | |
| Bluespotted Sunfish | 0 | 1 | 0 | 1 | 2 | 54 | -- | 55 | -- | -- | 54 | -- | 55 | 3 | -- | 3 | | | | | | | | | | | | | |
| Eastern Mosquitofish | 9 | 7 | 5 | 4 | 28 | 28 | 32 | 26 | -- | -- | 35 | 35 | 37 | 2 | 2 | 1 | | | | | | | | | | | | | |
| Eastern Mudminnow | 0 | 1 | 2 | 2 | 5 | 53 | 58 | 53 | -- | -- | 53 | 65 | 55 | 2 | 5 | 3 | | | | | | | | | | | | | |
| Golden Shiner | 0 | 7 | 3 | 6 | 16 | 78 | 88 | 91 | -- | -- | 99 | 120 | 102 | 35 | 27 | 40 | | | | | | | | | | | | | |
| Mud Sunfish | 3 | 0 | 0 | 0 | 0 | 74 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Pirate Perch | 0 | 12 | 7 | 2 | 23 | 31 | 25 | 55 | -- | -- | 68 | 70 | 60 | 42 | 19 | 5 | | | | | | | | | | | | | |
| Redfin Pickerel | 3 | 6 | 2 | 1 | 10 | 80 | 79 | 80 | -- | -- | 112 | 84 | 80 | 35 | 7 | 3 | | | | | | | | | | | | | |
| Swampfish | 0 | 3 | 0 | 0 | 3 | 39 | -- | -- | -- | -- | 50 | -- | -- | 1 | -- | -- | | | | | | | | | | | | | |
| Warmouth | 0 | 2 | 2 | 0 | 4 | 60 | 69 | -- | -- | -- | 69 | 158 | -- | 10 | 76 | -- | | | | | | | | | | | | | |
| Yellow Bullhead | 0 | 2 | 0 | 1 | 3 | 126 | -- | 120 | -- | -- | 126 | -- | 120 | 42 | -- | 23 | | | | | | | | | | | | | |
| UTEch36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Banded Pygmy Sunfish | 0 | 6 | 0 | 0 | 6 | 19 | -- | -- | -- | -- | 31 | -- | -- | 1 | -- | -- | | | | | | | | | | | | | |
| Bluegill | 7 | 0 | 0 | 0 | 0 | 43 | -- | -- | -- | -- | 89 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Coastal Shiner | 10 | 0 | 0 | 0 | 0 | na | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Creek Chubsucker | 4 | 0 | 0 | 0 | 0 | 55 | -- | -- | -- | -- | 150 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Dollar Sunfish | 0 | 2 | 0 | 0 | 2 | 65 | -- | -- | -- | -- | 78 | -- | -- | 14 | -- | -- | | | | | | | | | | | | | |
| Eastern Mosquitofish | 34 | 26 | 0 | 0 | 26 | 16 | -- | -- | -- | -- | 48 | -- | -- | 10 | -- | -- | | | | | | | | | | | | | |
| Flier | 6 | 0 | 0 | 0 | 0 | 33 | -- | -- | -- | -- | 91 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Golden Shiner | 3 | 0 | 0 | 0 | 0 | 99 | -- | -- | -- | -- | 110 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Largemouth Bass | 3 | 0 | 0 | 0 | 0 | 49 | -- | -- | -- | -- | 180 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Mud Sunfish | 1 | 0 | 0 | 0 | 0 | 125 | -- | -- | -- | -- | 125 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Pirate Perch | 0 | 1 | 0 | 0 | 1 | 61 | -- | -- | -- | -- | 61 | -- | -- | 3 | -- | -- | | | | | | | | | | | | | |
| Redbreast Sunfish | 2 | 0 | 0 | 0 | 0 | 82 | -- | -- | -- | -- | 84 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Spotted Sunfish | 4 | 0 | 0 | 0 | 0 | 91 | -- | -- | -- | -- | 99 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Warmouth | 1 | 0 | 0 | 0 | 0 | 76 | -- | -- | -- | -- | 76 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| UTFox04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Eel | 1 | -- | -- | -- | dry | 335 | -- | -- | -- | -- | 335 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Bluegill | 1 | -- | -- | -- | dry | 100 | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Coastal Shiner | 3 | -- | -- | -- | dry | na | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Creek Chubsucker | 2 | -- | -- | -- | dry | 85 | -- | -- | -- | -- | 85 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Dollar Sunfish | 5 | -- | -- | -- | dry | 60 | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | | | | | | | | | | | | | |
| Dusky Shiner | 9 | -- | -- | -- | dry | na | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | | | | | | | | | | | | | |

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | | | | | | | |
|-----------------------------|------------------------|------|------|----|------|------|--------------|------|------|----------------|---------------------|----|------|-----|------|-----|---------------------|-----|------|----------------|------|-----|------------|----|------|----|------|----|------|----|----|----|------|----|----|
| | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 2002 | | | | | | |
| | Single Pass | Pass | 1 | 2 | 3 | Pass | Pop. Est. | 2002 | 2002 | Single Pass | Pass | 1 | 2 | 3 | Pass | 1 | 2 | 3 | Pass | Single Pass | Pass | 1 | 2 | 3 | Pass | 1 | 2 | 3 | Pass | 1 | 2 | 3 | Pass | | |
| KutzC26 continued... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eastern Mosquitofish | 32 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Ironcolor Shiner | 7 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Mud Sunfish | 5 | -- | -- | -- | -- | -- | dry | | | 73 | -- | -- | -- | -- | -- | 100 | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Spotted Sunfish | 5 | -- | -- | -- | -- | -- | dry | | | 60 | -- | -- | -- | -- | -- | 67 | -- | -- | -- | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| UTMee08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal Shiner | 7 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Common Shiner | 9 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Dollar Sunfish | 1 | -- | -- | -- | -- | -- | dry | | | 38 | -- | -- | -- | -- | -- | 38 | -- | -- | -- | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 15 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Flier | 2 | -- | -- | -- | -- | -- | dry | | | 55 | -- | -- | -- | -- | -- | 75 | -- | -- | -- | 75 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ironcolor Shiner | 10 | -- | -- | -- | -- | -- | dry | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pirate Perch | 4 | -- | -- | -- | -- | -- | dry | | | 54 | -- | -- | -- | -- | -- | 78 | -- | -- | -- | 78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 2 | -- | -- | -- | -- | -- | dry | | | 120 | -- | -- | -- | -- | -- | 125 | -- | -- | -- | 125 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Spotted Sucker | 1 | -- | -- | -- | -- | -- | dry | | | 220 | -- | -- | -- | -- | -- | 220 | -- | -- | -- | 220 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| UTMil40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Eel | 1 | 2 | 0 | 0 | 1 | 0 | 3 | | | 300 | 235 | -- | -- | 108 | 262 | 300 | -- | 108 | 262 | 300 | -- | 262 | -- | -- | 108 | 41 | -- | -- | -- | -- | -- | -- | 2 | | |
| Banded Pygmy Sunfish | 0 | 0 | 1 | 0 | 0 | 0 | 1 | | | -- | -- | 31 | -- | -- | -- | -- | -- | 31 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Banded Sunfish | 8 | 0 | 0 | 0 | 0 | 0 | 0 | | | 45 | -- | -- | -- | -- | -- | 55 | -- | -- | -- | 55 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Bluespotted Sunfish | 0 | 0 | 0 | 1 | 0 | 0 | 1 | | | -- | -- | 72 | -- | -- | -- | -- | -- | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Common Shiner | 9 | 0 | 0 | 0 | 0 | 0 | 0 | | | na | -- | -- | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Dollar Sunfish | 0 | 3 | 0 | 0 | 0 | 0 | 3 | | | -- | 77 | -- | -- | -- | -- | -- | 93 | -- | -- | -- | -- | 93 | -- | -- | -- | 38 | -- | -- | -- | -- | -- | -- | -- | -- | |
| Eastern Mosquitofish | 32 | 4 | 1 | 2 | 0 | 2 | 7 | | | na | 40 | 43 | -- | 22 | 58 | na | 43 | 29 | 58 | na | 80 | 58 | 29 | 8 | 29 | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Eastern Mudminnow | 3 | 0 | 0 | 0 | 0 | 0 | 0 | | | 52 | -- | -- | -- | -- | -- | 80 | -- | -- | -- | 80 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Flier | 8 | 0 | 0 | 0 | 0 | 0 | 0 | | | 90 | -- | -- | -- | -- | -- | 100 | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Redfin Pickerel | 6 | 2 | 1 | 1 | 1 | 1 | 4 | | | 90 | 93 | 76 | -- | 94 | 95 | 190 | 76 | 94 | 95 | 190 | 100 | 95 | 76 | 94 | 11 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | |
| Spotted Sunfish | 5 | 0 | 0 | 0 | 0 | 0 | 0 | | | 95 | -- | -- | -- | -- | -- | 100 | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Swamp Darter | 0 | 0 | 1 | 0 | 0 | 0 | 1 | | | -- | -- | 51 | -- | -- | -- | -- | 51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Warmouth | 0 | 0 | 2 | 0 | 0 | 0 | 2 | | | -- | -- | 99 | -- | -- | -- | -- | 128 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Yellow Bullhead | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | | -- | -- | -- | -- | 120 | -- | -- | -- | 120 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 22 | |

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | | |
|----------------------|------------------------|------|----|------|-----|-----|-----------|-------------|------|------|---------------------|-----|-------------|------|-----|-------------|---------------------|----|-------------|------|----|-------------|------------|----|-------------|------|----|-------------|------|----|
| | 1993 | | | 2002 | | | 2002 | | | 1993 | | | 2002 | | | 2002 | | | 1993 | | | 2002 | | | 2002 | | | 2002 | | |
| | Single Pass | Pass | 1 | Pass | 2 | 3 | Pop. Est. | Single Pass | Pass | 1 | Pass | 2 | Single Pass | Pass | 1 | Single Pass | Pass | 1 | Single Pass | Pass | 1 | Single Pass | Pass | 1 | Single Pass | Pass | 1 | Single Pass | Pass | 1 |
| Muddy24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bluegill | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 88 | | -- | -- | -- | 90 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bluespotted Sunfish | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 55 | | -- | -- | -- | 56 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Coastal Shiner | 7 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Common Shiner | 4 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 0 | 12 | 0 | 0 | 0 | 12 | 12 | -- | | 18 | -- | -- | -- | | 37 | -- | -- | -- | -- | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mudminnow | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 55 | | -- | -- | -- | 75 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ironcolor Shiner | 13 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | | -- | -- | -- | 90 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nicho27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dollar Sunfish | 8 | -- | -- | -- | -- | -- | dry | 51 | | -- | -- | -- | 57 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 18 | -- | -- | -- | -- | -- | dry | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 3 | -- | -- | -- | -- | -- | dry | 38 | | -- | -- | -- | 110 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Eel | 0 | 8 | 3 | 2 | 14 | 14 | 14 | -- | | 145 | 131 | 165 | -- | | 262 | 180 | 212 | 83 | | | | | | | | | | | 12 | 18 |
| Banded Sunfish | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | | -- | -- | -- | 47 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Coastal Shiner | 10 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dusky Shiner | 6 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 15 | 0 | 0 | 2 | 2 | 2 | 2 | na | | -- | -- | 27 | na | | -- | -- | 41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 | -- | -- |
| Flier | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | | -- | -- | -- | 70 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ironcolor Shiner | 7 | 0 | 0 | 0 | 0 | 0 | 0 | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mud Sunfish | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 168 | | -- | -- | -- | 174 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pirate Perch | 2 | 2 | 5 | 1 | 8 | 8 | 8 | 73 | | 48 | 49 | 58 | 75 | | 51 | 53 | 58 | 3 | | | | | | | | | | 10 | 3 | |
| Redfin Pickerel | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 45 | | 84 | 93 | -- | 50 | | 84 | 93 | -- | 4 | | | | | | | | | | 6 | -- | |
| Tadpole Madtom | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | | -- | -- | -- | 80 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Persi15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Banded Pygmy Sunfish | 4 | -- | -- | -- | dry | dry | dry | 34 | | -- | -- | -- | 50 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bluegill | 1 | -- | -- | -- | dry | dry | dry | 90 | | -- | -- | -- | 90 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Brown Bullhead | 2 | -- | -- | -- | dry | dry | dry | 100 | | -- | -- | -- | 134 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chain Pickerel | 3 | -- | -- | -- | dry | dry | dry | 34 | | -- | -- | -- | 150 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Common Shiner | 7 | -- | -- | -- | dry | dry | dry | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dollar Sunfish | 3 | -- | -- | -- | dry | dry | dry | 40 | | -- | -- | -- | 45 | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 9 | -- | -- | -- | dry | dry | dry | na | | -- | -- | -- | na | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | Electrofishing Results | | | | | | | | | | Minimum Length (mm) | | | | | | Maximum Length (mm) | | | | | | Weight (g) | | | | | | | |
|----------------------|------------------------|------|------|----|------|------|------|------|------|------|---------------------|------|------|-----|------|------|---------------------|------|--------|------|------|-----|------------|------|------|------|------|----|------|----|
| | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 1993 | | 2002 | | 2002 | | 2002 | | 2002 | | 2002 | |
| | Single | Pass | 1 | 2 | 3 | Pass | Pop. | Est. | 2002 | 2002 | Single | Pass | 1 | 2 | 3 | Pass | 2002 | 2002 | Single | Pass | 1 | 2 | 3 | Pass | 2002 | 2002 | 1 | 2 | 3 | |
| Pers15 continued... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flier | 4 | -- | -- | -- | -- | -- | dry | | | | 65 | -- | -- | -- | -- | -- | -- | -- | 78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Gizzard Shad | 3 | -- | -- | -- | -- | -- | dry | | | | 120 | -- | -- | -- | -- | -- | -- | -- | 130 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mud Sunfish | 3 | -- | -- | -- | -- | -- | dry | | | | 74 | -- | -- | -- | -- | -- | -- | -- | 78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pirate Perch | 1 | -- | -- | -- | -- | -- | dry | | | | 56 | -- | -- | -- | -- | -- | -- | -- | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redbreast Sunfish | 4 | -- | -- | -- | -- | -- | dry | | | | 67 | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 5 | -- | -- | -- | -- | -- | dry | | | | 100 | -- | -- | -- | -- | -- | -- | -- | 350 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Spotted Sunfish | 3 | -- | -- | -- | -- | -- | dry | | | | 98 | -- | -- | -- | -- | -- | -- | -- | 110 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Warmouth | 2 | -- | -- | -- | -- | -- | dry | | | | 59 | -- | -- | -- | -- | -- | -- | -- | 60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Savan16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bluegill | 3 | -- | -- | -- | -- | -- | dry | | | | 59 | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bowfin | 2 | -- | -- | -- | -- | -- | dry | | | | 100 | -- | -- | -- | -- | -- | -- | -- | 121 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Brown Bullhead | 3 | -- | -- | -- | -- | -- | dry | | | | 96 | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chain Pickerel | 3 | -- | -- | -- | -- | -- | dry | | | | 56 | -- | -- | -- | -- | -- | -- | -- | 70 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Common Shiner | 6 | -- | -- | -- | -- | -- | dry | | | | na | -- | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 16 | -- | -- | -- | -- | -- | dry | | | | na | -- | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Largemouth Bass | 1 | -- | -- | -- | -- | -- | dry | | | | 130 | -- | -- | -- | -- | -- | -- | -- | 130 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mud Sunfish | 3 | -- | -- | -- | -- | -- | dry | | | | 80 | -- | -- | -- | -- | -- | -- | -- | 90 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pirate Perch | 2 | -- | -- | -- | -- | -- | dry | | | | 50 | -- | -- | -- | -- | -- | -- | -- | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redbreast Sunfish | 3 | -- | -- | -- | -- | -- | dry | | | | 98 | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Redfin Pickerel | 7 | -- | -- | -- | -- | -- | dry | | | | 32 | -- | -- | -- | -- | -- | -- | -- | 150 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Spotted Sunfish | 4 | -- | -- | -- | -- | -- | dry | | | | 78 | -- | -- | -- | -- | -- | -- | -- | 86 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Warmouth | 3 | -- | -- | -- | -- | -- | dry | | | | 74 | -- | -- | -- | -- | -- | -- | -- | 77 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Steed30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Eel | 0 | 1 | 3 | 1 | 5 | | | | | | -- | 189 | 55 | 243 | 189 | 162 | 243 | 189 | -- | -- | -- | -- | -- | 7 | 10 | 20 | -- | -- | -- | -- |
| Chain Pickerel | 3 | 0 | 0 | 0 | 0 | | | | | | 52 | -- | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Coastal Shiner | 8 | 0 | 0 | 0 | 0 | | | | | | na | -- | -- | -- | -- | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Creek Chubsucker | 4 | 0 | 0 | 0 | 0 | | | | | | 86 | -- | -- | -- | -- | -- | -- | -- | 97 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Eastern Mosquitofish | 30 | 0 | 2 | 1 | 3 | | | | | | na | -- | 37 | 18 | -- | 41 | -- | 18 | na | -- | -- | -- | -- | -- | 1 | 10 | -- | -- | -- | -- |
| Eastern Mudminnow | 0 | 0 | 2 | 0 | 2 | | | | | | -- | -- | 70 | -- | -- | 81 | -- | -- | -- | -- | -- | -- | -- | -- | 10 | -- | -- | -- | -- | -- |
| Flier | 0 | 2 | 0 | 0 | 2 | | | | | | -- | 77 | 108 | -- | -- | 97 | -- | -- | -- | -- | 97 | -- | -- | 22 | -- | -- | -- | -- | -- | -- |
| Golden Shiner | 3 | 2 | 1 | 0 | 3 | | | | | | 87 | 102 | 28 | -- | -- | 108 | -- | -- | 100 | -- | 110 | 108 | -- | 19 | 10 | -- | -- | -- | -- | -- |
| Hogchoker (sole) | 0 | 0 | 4 | 4 | 8 | | | | | | -- | -- | 24 | 16 | -- | 30 | -- | 40 | -- | -- | -- | 30 | -- | -- | 1 | 10 | -- | -- | -- | -- |
| Least Killifish | 0 | 0 | 0 | 1 | 1 | | | | | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Appendix C: Key to habitat features identified during habitat surveys

Table C1. Description of habitat types used during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002, modified from Armantrout (1998).

| Habitat Type | Stream Bed Profile | Gradient (%) | Surface Turbulence | Water Velocity |
|--------------|--------------------|--------------|--------------------|----------------|
| Pool | concave | <1 | none to high | low |
| Glide | flat | <1 | none | low |
| Run | flat | >1 | low to none | high |
| Riffle | convex | >1 | moderate to high | high |
| Cascade | convex | >12% | very high | very high |

Table C2. Size classes used to categorize substrate particles during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002, based on modified Wentworth scale. Size was visually estimated on the intermediate axis (b-axis).

| Size Class | Name | Size (mm) | Description |
|------------|--------------|----------------|---|
| 1 | Organic | -- | Dead organic matter, leaves, detritus, etc. |
| 2 | Clay | < 0.00024 | Sticky |
| 3 | Silt | 0.00024-0.0039 | Slippery |
| 4 | Sand | 0.0039-2 | Gritty |
| 5 | Small Gravel | 3-16 | Sand to thumbnail |
| 6 | Large Gravel | 17-64 | Thumbnail to fist |
| 7 | Cobble | 65-256 | Fist to head |
| 8 | Boulder | >256 | Larger than head |
| 9 | Bedrock | -- | Solid parent material |

Table C3. Size classes used to categorize large woody debris during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002. Woody debris < 1.0 m in length or < 10 cm in diameter were omitted.

| Size Class | Length (m) | Diameter (cm) |
|------------|------------|---------------|
| 1 | < 5 | 10-55 |
| 2 | < 5 | > 55 |
| 3 | > 5 | 10-55 |
| 4 | > 5 | > 55 |